

AFGL-TR-88-0161

DTIC FILE COPY

Absolute Absorption Cross Section Measurements of
Ozone and the Temperature Dependence at Four
Reference Wavelengths Leading to Renormalization
of the Cross Section Between 240 and 350 nm

W. H. Parkinson
K. Yoshino
D. E. Freeman

Smithsonian Institution
Astrophysical Observatory
Cambridge, MA 02138

March 1988

Final Report
24 July 1985-31 December 1987

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

AIR FORCE GEOPHYSICS LABORATORY
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE
HANSCOM AIR FORCE BASE, MASSACHUSETTS 01731-5000

DTIC
ELECTE
SEP 27 1988
S H D

88 9 27 13 6

AD-A199 737

"This technical report has been reviewed and is approved for publication"

Gail P. Anderson
(Signature)
GAIL P. ANDERSON
Contract Manager

Robert O'Neil
(Signature)
ROBERT O'NEIL
Branch Chief

FOR THE COMMANDER

R. Earl Good
(Signature)
R. EARL GOOD
Division Director
Optical/Infrared Technology Division

This report has been reviewed by the ESD Public Affairs Office (PA) and is releasable to the National Technical Information Service (NTIS).

Qualified requestors may obtain additional copies from the Defense Technical Information Center. All others should apply to the National Technical Information Service.

If your address has changed, or if you wish to be removed from the mailing list, or if the addressee is no longer employed by your organization, please notify AFGL/DAA, Hanscom AFB, MA 01731. This will assist us in maintaining a current mailing list.

Do not return copies of this report unless contractual obligations or notices on a specific document requires that it be returned.

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION Unclassified			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION / AVAILABILITY OF REPORT Approved for public release; Distribution unlimited		
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE					
4. PERFORMING ORGANIZATION REPORT NUMBER(S)			5. MONITORING ORGANIZATION REPORT NUMBER(S) AFGL-TR-88-0161		
6a. NAME OF PERFORMING ORGANIZATION Smithsonian Institution		6b. OFFICE SYMBOL (if applicable)		7a. NAME OF MONITORING ORGANIZATION Air Force Geophysics Laboratory	
6c. ADDRESS (City, State, and ZIP Code) Astrophysical Observatory Cambridge, MA 02138			7b. ADDRESS (City, State, and ZIP Code) Hanscom AFB Massachusetts 01731-5000		
8a. NAME OF FUNDING / SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (if applicable)		9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER F19628-85-K-0049	
8c. ADDRESS (City, State, and ZIP Code)			10. SOURCE OF FUNDING NUMBERS		
			PROGRAM ELEMENT NO 62101F	PROJECT NO 7670	TASK NO 09
			WORK UNIT ACCESSION NO AX		
11. TITLE (Include Security Classification) Absolute Absorption Cross Section Measurements of Ozone and the Temperature Dependence at Four Reference Wavelengths Leading to Renormalization of the Cross Section Between 240 and 350 nm					
12. PERSONAL AUTHOR(S) W. H. Parkinson, K. Yoshino, D. E. Freeman					
13a. TYPE OF REPORT FINAL REPORT		13b. TIME COVERED FROM 7/24/85 to 12/31/87		14. DATE OF REPORT (Year, Month, Day) 1988 March	
15. PAGE COUNT 36					
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP	OZONE ABSORPTION CROSS SECTIONS; HARTLEY-HUGGINS BANDS; ULTRAVIOLET; TEMPERATURE DEPENDENCE; OPTICAL DEPTH.		
19. ABSTRACT (Continue on reverse if necessary and identify by block number) We have developed techniques for the preparation and preservation of pure ozone which have enabled its absolute cross section at important mercury-line reference wavelength 253.7 nm and at iron line wavelengths 283.3, 245.8 and 263.7 nm to be determined at the temperatures 293, 228 and 195 K. Specially constructed absorption cells are used together with existing spectrometers and associated equipment and light sources which have already been employed successfully to study the absolute cross section of ozone at longer wavelengths. This determination of the temperature dependence of the absolute cross section at 238.3, 245.8, 253.7 and 263.7 nm permit renormalization of the full relative cross sections for ozone between 240 nm and 350 nm. A tabular and computer accessible form of the ozone cross sections data has been made at 5/cm ⁻¹ intervals. These absolute cross sections and their temperature dependence are needed for accurate calculations of the atmospheric transmission in the visible and near ultraviolet regions.					
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION Unclassified		
22a. NAME OF RESPONSIBLE INDIVIDUAL Gail Anderson			22b. TELEPHONE (Include Area Code) (617) 377-2335		22c. OFFICE SYMBOL AFGL/OPE

DD FORM 1473, 84 MAR

83 APR edition may be used until exhausted.
All other editions are obsolete.SECURITY CLASSIFICATION OF THIS PAGE
Unclassified

CONTENTS

1. Abstract of Objectives	1
2. Introduction	1
3. Absorption Cross Section Measurements of Ozone	3
3.1 Ozone Absorption Cell and Preparation of Ozone	3
3.2 Optical Depth Measurements	3
4. Results	4
5. Presentations	6
5.1 Publications	6
5.2 Presentation at Meetings and Seminars	6
Acknowledgement	7
References	9



A-1	
Distribution/	
Availability Code	
Date	
By	
A-1	

1. Abstract of Objectives

We have developed techniques for the preparation and preservation of pure ozone which have enabled its absolute cross section at important mercury-line reference wavelength 253.7 nm and at iron line wavelengths 238.3, 245.8 and 263.7 nm to be determined at the temperatures 293, 228 and 195 K. Specially constructed absorption cells are used together with existing spectrometers and associated equipment and light sources which have already been employed successfully to study the absolute cross section of ozone at longer wavelengths. This determination of the temperature dependence of the absolute cross section at 238.3, 245.8, 253.7 and 263.7 nm permit renormalization of the full relative cross sections for ozone between 240 nm and 350 nm. A tabular and computer accessible form of the ozone cross sections data has been made at 5 cm⁻¹ intervals. These absolute cross sections and their temperature dependence are needed for accurate calculations of the atmospheric transmission in the visible and near ultraviolet regions.

2. Introduction

The atmospherically important molecule ozone occurs in the troposphere and stratosphere where the temperature ranges approximately from 200 K to 300 K. Accurate calculations of the atmospheric transmission in the visible and near ultraviolet regions therefore require laboratory values of the absorption cross section of ozone and its temperature dependence. In the usual method of determining the absorption cross section $\sigma(\lambda)$ of a molecule, the formula

$$\ln I_0(\lambda)/I(\lambda) = N\sigma(\lambda) \quad (1)$$

is used in which the measured quantities are the ratio of the incident flux

$I_0(\lambda)$ to that transmitted $I(\lambda)$ through the gas and the column density N of absorbing molecules. In the application to ozone the major difficulty has been that the ozone column density is generally not obtainable directly from measurements of the total pressure, because ozone is difficult to prepare free from oxygen and because it decomposes, especially under irradiation, into oxygen. However, we have found that, when special precautions are taken to prepare pure ozone and to prevent its subsequent decomposition, the column density can be obtained accurately from measurement of the total pressure, which can be used with measurements of the optical depth to yield accurate absorption cross sections of ozone.

In the present research, we have measured the absolute cross sections of ozone at 293 K, 228 K, and 195 K at the important mercury-line reference wavelength of 253.7 nm. Many cross section measurements of ozone have been made relative to the cross section at this wavelength. However, existing measurements of the absolute cross section at 253.7 nm are adequate only at room temperature and are unsatisfactory at lower temperatures. The determination of the temperature dependence of the absolute cross section at 253.7 nm would permit many relative cross section measurements in other wavelength region, such as of Bass and Paur (1981, 1985) and our own (Freeman et al., 1981), to be put on a firm absolute basis.

In addition to this investigation at 253.7 nm, which is the usually accepted reference wavelength, we have measured the cross sections of ozone and their temperature dependences at the wavelengths 238.28, 245.83 and 263.66 nm, at the same temperatures (293 K, 228 K and 195 K) at which the study at 253.7 nm is conducted. The results have been combined with the absolute cross sections of ozone at several discrete wavelengths in the region 289-335 nm made earlier. These results permit renormalization of

the full relative cross section of ozone between 240 and 350 nm. We have constructed a tabular computer-accessible array of ozone cross sections at intervals of 5 cm^{-1} .

3. Absorption Cross Section Measurements of Ozone

3.1 Ozone Absorption Cell and Preparation of Ozone

A specially designed ozone absorption cell, made primarily of Pyrex glass but possessing fused silica windows, has been constructed. The vacuum-tight cell has been out-gassed by baking under vacuum, and passivated by prolonged exposure to ozone. The entire ozone column is cooled to 228 K or 195 K by immersing the cell in stirred methanol which is cooled by a cold finger connected to an external refrigeration unit. The experimental arrangement is shown in Fig. 1. Tubes with silica windows at each end are mounted to the end of the absorption cell. The tubes are evacuated to prevent condensation of atmospheric water on the cooled windows and also to provide thermal insulation.

Ozone is prepared from pure oxygen (Airco grade 4.5 passed through a liquid nitrogen trap) at 78 K in a Tesla discharge, by cooling liquid ozone at 78 K, and purifying it by pumping off residual oxygen from the oxygen/ozone mixture at 78 K. The ozone was not stored on silica gel because it absorbs not only ozone but also oxygen.

3.2 Optical Depth Measurements

The background continuum is provided by a hydrogen discharge lamp that is connected to the entrance slit assembly of a 0.3 m Czerny-Turner monochrometer. The hollow cathode or mercury lamp are set behind the

hydrogen discharge lamp and are used to locate the required wavelengths. A thermally controlled mercury lamp is also used as the background source at 253.7 nm. Slit heights are limited to 2 mm to cut down scattered light which is estimated to be about 2% with continuum radiation as the background source. At 253.7 nm, the mercury line is also used as background radiation in which case there is negligible scattered light.

The incident intensity (I_0) was measured after ozone in the absorption cell was pumped out through traps cooled with liquid nitrogen. Ozone trapped at liquid nitrogen temperature has a vapour pressure of 2.5 m Torr at 78 K (Hanson and Mauersberger, 1986) and was measured as 3 m Torr in our experiment. It should be noted that with 2.5 m Torr of ozone in the 10 cm cell about 1% absorption is expected at 253.7 nm where the cross section of ozone is $1.15 \times 10^{-17} \text{ cm}^2$. This significant absorption was taken into account when the incident intensity I_0 was measured.

4. Results

The absolute cross sections at the wavelengths 238.28, 245.83, 253.73 and 263.66 nm have been measured at 295 K, 228 K and 195 K. Those numbers are listed in Table 1 with the absolute cross sections measured previously for the longer wavelength region. All measurements except the one at 253.7 nm were obtained with the background continuum radiation from a hydrogen discharge or xenon arc. The optical depth, $\ln I_0/I$, has been limited to the range 2.0-0.5 in the entire set of measurements. The 0.7% uncertainty in the cross sections arises from the statistical scatter of 0.3-0.5% in the optical depths, uncertainty of 0.2% in the optical path length, uncertainties of 0.1-0.4% in the temperatures, and an uncertainty of 0.5% in the pressure measurement. Another possible source of error is the

purity of ozone which we assumed to be 100% pure to obtain the column density.

The absorption cross section of ozone at five mercury wavelengths are compared with those of previous work in Table 2, where only photoelectric measurements are collected. The agreement is reasonable at most wavelengths. All measurements are scattered within 2.5% of the average values but the values by Molina and Molina (1986) are slightly higher than other measurements, though by less than 1%. Without the values of Molina and Molina, all would agree within 1.5%. It should be emphasized that it is very difficult to achieve better than 1% uncertainty in photoabsorption cross section measurements and an additional problem is presented in the case of ozone because of its tendency to decompose. This agreement with many different techniques is quite satisfactory.

The values of the absolute cross sections of ozone at 195 K are compared with those from our published relative cross section measurements throughout the region 238-344 nm (Freeman *et al.*, 1984). The ratio of the absolute to the published numbers are listed in the sixth column of Table 1 of Quarterly Status Report No. 9. The cubic least-squares fit to those ratio leads to the smooth conversion factors for every wavelength and the conversion factors put our published numbers on an absolute bases. The results are shown in Table 3 at intervals of 5 cm^{-1} throughout the region of measurements and also are plotted in Fig. 2. In the same table, the calculated cross sections at 195 K from the parameters supplied by Bass are listed and their ratios are also listed in the same table. The calculated cross sections at 195 K by Bass are also plotted in Fig. 3. Except for the very longer wavelengths, both sets of numbers agree within 2-3%. In the longer wavelengths where band structures appear,

differences increase to around 20%, especially at the minimum absorption of the bands. We believe that the differences in the longer wavelengths are due to the limited sensitivity of Bass's technique for such weak absorption.

5. Presentations

5.1 Publications

Absolute Absorption Cross Section Measurements of Ozone in the Wavelength Region 238-335 nm and the Temperature Dependence, K. Yoshino, D.E. Freeman, J.R. Esmond, and W.H. Parkinson, Planet. Space Sci., accepted for publication.

5.2 Presentation at Meetings and Seminars

- 3/25/87 Seminar at Dalhousie University, Halifax, Canada.
High Resolution Ultraviolet Absorption Cross Sections of Atmospheric Molecules.
K. Yoshino
- 5/18-20/87 The Cambridge Meeting of the American Physical Society
The 18th Annual Meeting of the Division of Atomic, Molecular, and Optical Physics
High Resolution Absorption Cross Sections of Atmospheric Molecules in the Wavelength Region 175-350 nm
K. Yoshino, D.E. Freeman, A.S.-C. Cheung, J.R. Esmond and W.H. Parkinson

- 6/2-4/87 The 10th Annual Review Conference, AFGL, Bedford, MA
Absolute Absorption Cross Section Measurements of Ozone and the
Temperature Dependence
K. Yoshino, D.E. Freeman, and W.H. Parkinson
- 6/15-19/87 42nd Symposium on Molecular Spectroscopy
Absolute Absorption Cross Section Measurements of Ozone and
the Temperature Dependence.
K. Yoshino, D.E. Freeman, and W.H. Parkinson
- 10/27/87 Seminar at Herzberg Institute of Astrophysics, NRC, Canada
High-Resolution VUV Studies of the Atmospheric Transmittance
K. Yoshino

Acknowledgement

A part of this work was also supported by the NASA Upper Atmospheric Research Program under Grant No. NAG 5-144 to Harvard College Observatory. We thank Drs. Al Hall and G. Anderson of AFGL for their support for this work and for supplying parameters for temperature dependence of Bass's cross sections.

References

- Barnes, J. and Mauersberger, K. (1988) Temperature dependence of the ozone absorption cross section at the 253.7 nm mercury line, J. Geophys. Res., accepted for publication.
- Bass, A.M. and Paur, R.J. (1981) UV absorption cross sections for ozone: temperature dependence, J. Photochem. **17**, 141.
- Bass, A.M. and Paur, R.J. (1985) The ultraviolet cross-sections of ozone: I. Measurements, in Atmospheric Ozone, Proceedings of the Quadrennial Ozone Symposium in Halkidiki, Greece, edited by C. Zeferos and A. Ghazi, pp. 606-616, D. Reidel, (Kluwer Academic Publishers, Hingham MA).
- Freeman, D.E., Yoshino, K., Esmond, J.R. and Parkinson, W.H. (1984) High resolution absorption cross-section measurements of ozone at 195 K in the wavelength region 240-350 nm, Planet. Space Sci. **32**, 239.
- Hanson, D. and Mauersberger, K. (1986) The vapor pressures of solid and liquid ozone, J. Chem. Phys. **85**, 4669.
- Malicet, J., Brion, J. and Daumont, D. (1985) New values of ozone absolute cross-sections in the ultraviolet spectral range at 298 and 228 K, by Method Based upon Pressure Measurements at Constant Volume, in Atmospheric Ozone, Proceedings of the Quadrennial Ozone Symposium in Halkidiki, Greece, edited by C. Zeferos and A. Ghazi, pp. 617-621, (Kluwer Academic Publishers, Hingham MA).
- Mauersberger, K., Barnes, J., Hanson, D. and Morton, J. (1986) Measurements of the ozone absorption cross-section at the 253.7 nm mercury line, Geophys. Res. Lett. **13**, 671.
- Hearn, A.G. (1961) The absorption of ozone in the ultra-violet and visible regions of the spectrum, Proc. Phys. Soc. **78**, 932.
- Inn, E.C.Y. and Tanaka, Y. (1953) Absorption coefficients of ozone in the

ultraviolet and visible region, J. Opt. Soc. Am. 43, 870.

Molina, L.T. and Molina, M.J. (1986) Absolute absorption cross sections of ozone in the 185-350 nm wavelength range, J. Geophys. Res. 91, 14501.

Table 1. Absorption Cross Sections of Ozone, in Units of 10^{-x} cm^2

Wavelength (nm)		x	Cross Sections ^a		
Vacuum	Air		295 K	228 K	195 K
238.2762	238.2035	18	7.45 [15]	7.51 [15]	7.51 [52]
245.8341	245.7597	17	1.010 [9]	1.006 [11]	1.017 [9]
253.7279	253.6517	17	1.144 [8]	1.154 [10]	1.152 [10]
253.7279	253.6517 (Hg)	17	1.145 [26]	1.155 [18]	1.151 [15]
263.6594	263.5809	18	9.71 [9]	9.66 [9]	9.64 [11]
272.1708	272.0902	18	6.82 [4]	6.70 [4]	6.67 [2]
281.4115	281.3286	18	3.52 [6]	3.31 [4]	3.30 [5]
289.4446 ^b	289.3598	18	1.488 [5]	1.402 [4]	1.399 [5]
296.8150 ^b	296.7284	19	5.97 [6]	5.60 [4]	5.50 [5]
302.2380 ^b	302.1500	19	2.91 [5]	2.65 [5]	2.58 [5]
314.2242	314.1332	20	5.86 [5]	4.86 [5]	4.80 [5]
322.1649	322.0719	20	2.39 [6]	2.15 [4]	2.20 [3]
334.2442 ^b	334.1481	21	4.37 [3]	3.11 [3]	2.93 [3]
344.3526	344.2539	21	1.132 [3]	0.974 [3]	0.843 [3]

^aThe numbers in the brackets are the numbers of optical depth measurements.

^bCross sections were presented previously [Freeman *et al.*, 1985].

Table 2. Absorption Cross Sections of Ozone in Units of 10^{-x} cm^2 ,
at Hg I Wavelengths

Temperature K		x=17	18	19	19	21
		Cross Section				
		$\lambda 253.6$	$\lambda 289.3$	$\lambda 296.7$	$\lambda 302.1$	$\lambda 334.1$
YFEP ^a (1988)	295	1.145	1.488	5.97	2.91	4.37
	228	1.155	1.402	5.60	2.65	3.11
MM ^b (1986)	298	1.157	1.540	6.229	3.027	4.46
	226	1.166	1.468	5.766	2.720	3.22
MBHM ^c (1986)	297	1.137				
BM ^d (1987)	297	1.136				
	221	1.144				
BP ^e (1985)	298		1.501	6.07	2.94	4.7
	228		1.423	5.59	2.64	3.5
MBD ^f (1985)	298		1.436	5.83	2.83	4.28
H ^g (1961)	294	1.147	1.47	5.971	2.860	4.27
IT ^h (1953)	295	1.140	1.46	5.76	2.84	5.22

^aYoshino, Freeman, Esmond and Parkinson, present work

^bMolina and Molina (1986)

^cMauersberger, Barnes, Hanson and Morton (1986)

^dBarnes and Mauersberger (1987)

^eBass and Paur (1985)

^fMalicet, Brion and Daumont (1985)

^gHearn (1961)

^hInn and Tanaka (1953)

Table 3

Comparison of ozone cross sections at 195 K: HCO and Bass data with RATIO - Bass / HCO										(1)	
Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
28600.000	3.21E-23			28875.000	9.90E-23			29150.000	2.26E-22	5.12E-22	2.266
28605.000	3.10E-23			28880.000	1.01E-22			29155.000	2.01E-22	5.14E-22	2.558
28610.000	2.65E-23			28885.000	1.05E-22			29160.000	1.94E-22	4.90E-22	2.524
28615.000	2.62E-23			28890.000	1.09E-22			29165.000	1.77E-22	4.65E-22	2.628
28620.000	3.01E-23			28895.000	1.24E-22			29170.000	1.63E-22	4.41E-22	2.704
28625.000	3.29E-23			28900.000	1.27E-22			29175.000	1.54E-22	4.16E-22	2.703
28630.000	3.08E-23			28905.000	1.37E-22			29180.000	1.58E-22	3.92E-22	2.479
28635.000	3.47E-23			28910.000	1.47E-22			29185.000	1.55E-22	3.67E-22	2.369
28640.000	3.47E-23			28915.000	1.51E-22			29190.000	1.51E-22	3.52E-22	2.334
28645.000	3.76E-23			28920.000	1.54E-22			29195.000	1.61E-22	3.61E-22	2.244
28650.000	3.58E-23			28925.000	1.61E-22			29200.000	1.69E-22	3.70E-22	2.191
28655.000	4.17E-23			28930.000	1.66E-22			29205.000	1.69E-22	3.79E-22	2.244
28660.000	3.98E-23			28935.000	1.65E-22			29210.000	1.77E-22	3.88E-22	2.193
28665.000	4.46E-23			28940.000	1.67E-22			29215.000	1.81E-22	3.97E-22	2.194
28670.000	4.75E-23			28945.000	1.79E-22			29220.000	1.96E-22	4.06E-22	2.071
28675.000	5.95E-23			28950.000	1.95E-22			29225.000	2.00E-22	4.15E-22	2.074
28680.000	5.53E-23			28955.000	2.13E-22			29230.000	2.13E-22	4.24E-22	1.990
28685.000	5.53E-23			28960.000	2.24E-22			29235.000	2.11E-22	4.20E-22	1.990
28690.000	6.21E-23			28965.000	2.38E-22			29240.000	2.20E-22	4.12E-22	1.871
28695.000	6.67E-23			28970.000	2.56E-22			29245.000	2.21E-22	4.04E-22	1.826
28700.000	6.27E-23			28975.000	2.67E-22			29250.000	2.29E-22	3.95E-22	1.727
28705.000	7.16E-23			28980.000	2.99E-22			29255.000	2.35E-22	3.87E-22	1.648
28710.000	7.71E-23			28985.000	3.19E-22			29260.000	2.49E-22	3.79E-22	1.523
28715.000	9.02E-23			28990.000	3.56E-22	3.68E-22	1.045	29265.000	2.50E-22	3.71E-22	1.484
28720.000	8.88E-23			28995.000	3.75E-22	3.88E-22	1.035	29270.000	2.69E-22	4.02E-22	1.494
28725.000	1.07E-22			29000.000	4.08E-22	4.08E-22	1.001	29275.000	2.75E-22	4.36E-22	1.586
28730.000	1.15E-22			29005.000	4.68E-22	4.28E-22	0.915	29280.000	2.93E-22	4.71E-22	1.606
28735.000	1.24E-22			29010.000	4.97E-22	4.48E-22	0.902	29285.000	3.23E-22	5.05E-22	1.563
28740.000	1.33E-22			29015.000	5.33E-22	4.68E-22	0.878	29290.000	3.39E-22	5.39E-22	1.591
28745.000	1.42E-22			29020.000	5.96E-22	4.88E-22	0.819	29295.000	3.81E-22	5.74E-22	1.506
28750.000	1.60E-22			29025.000	6.53E-22	5.08E-22	0.778	29300.000	3.96E-22	6.08E-22	1.535
28755.000	1.82E-22			29030.000	7.10E-22	5.28E-22	0.744	29305.000	4.32E-22	6.42E-22	1.487
28760.000	1.94E-22			29035.000	7.79E-22	5.48E-22	0.703	29310.000	4.71E-22	6.77E-22	1.437
28765.000	2.06E-22			29040.000	8.40E-22	5.68E-22	0.676	29315.000	5.09E-22	7.11E-22	1.397
28770.000	2.38E-22			29045.000	9.08E-22	5.88E-22	0.647	29320.000	5.62E-22	7.46E-22	1.327
28775.000	2.49E-22			29050.000	9.71E-22	6.08E-22	0.626	29325.000	6.02E-22	7.80E-22	1.296
28780.000	2.61E-22			29055.000	1.04E-21	6.28E-22	0.603	29330.000	6.56E-22	8.14E-22	1.241
28785.000	2.76E-22			29060.000	1.09E-21	6.48E-22	0.594	29335.000	6.99E-22	8.49E-22	1.214
28790.000	2.91E-22			29065.000	1.11E-21	6.68E-22	0.601	29340.000	7.76E-22	8.83E-22	1.138
28795.000	3.01E-22			29070.000	1.08E-21	6.87E-22	0.637	29345.000	8.50E-22	9.17E-22	1.079
28800.000	2.91E-22			29075.000	9.60E-22	7.07E-22	0.737	29350.000	9.31E-22	9.52E-22	1.022
28805.000	2.35E-22			29080.000	7.19E-22	6.93E-22	0.964	29355.000	1.03E-21	9.86E-22	0.957
28810.000	1.53E-22			29085.000	5.21E-22	6.16E-22	1.181	29360.000	1.11E-21	1.02E-21	0.919
28815.000	1.11E-22			29090.000	4.26E-22	5.38E-22	1.264	29365.000	1.23E-21	1.06E-21	0.858
28820.000	8.22E-23			29095.000	3.88E-22	4.61E-22	1.188	29370.000	1.31E-21	1.09E-21	0.832
28825.000	6.53E-23			29100.000	3.67E-22	4.44E-22	1.263	29375.000	1.42E-21	1.12E-21	0.791
28830.000	6.43E-23			29105.000	3.50E-22	4.68E-22	1.338	29380.000	1.54E-21	1.16E-21	0.752
28835.000	6.44E-23			29110.000	3.53E-22	4.73E-22	1.341	29385.000	1.61E-21	1.19E-21	0.741
28840.000	6.43E-23			29115.000	3.66E-22	4.83E-22	1.320	29390.000	1.66E-21	1.23E-21	0.739
28845.000	7.12E-23			29120.000	3.70E-22	4.88E-22	1.319	29395.000	1.68E-21	1.26E-21	0.751
28850.000	7.97E-23			29125.000	3.62E-22	4.93E-22	1.310	29400.000	1.60E-21	1.23E-21	0.768
28855.000	8.75E-23			29130.000	3.66E-22	4.98E-22	1.375	29405.000	1.36E-21	1.14E-21	0.836
28860.000	8.23E-23			29135.000	3.62E-22	5.02E-22	1.575	29410.000	1.02E-21	8.64E-22	0.847
28865.000	9.34E-23			29140.000	2.70E-22	5.07E-22	1.879	29415.000	7.73E-22	6.87E-22	0.889
28870.000	9.34E-23			29145.000	2.70E-22	5.07E-22	1.879	29420.000	6.57E-22	6.65E-22	1.012

(2)

Comparison of ozone cross sections at 195 K: HCO and Bass data with $\text{RATIO} = \text{Bass} / \text{HCO}$

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
29425.000	6.03E-22	5.95E-22	0.987	29700.000	1.67E-21	1.75E-21	1.048	29975.000	3.95E-21	4.03E-21	1.021
29430.000	5.70E-22	5.13E-22	0.900	29705.000	1.75E-21	1.67E-21	0.957	29980.000	2.95E-21	3.16E-21	1.071
29435.000	5.53E-22	5.10E-22	0.922	29710.000	1.81E-21	1.80E-21	0.993	29985.000	2.51E-21	2.53E-21	1.008
29440.000	5.68E-22	6.11E-22	1.075	29715.000	1.83E-21	1.75E-21	0.959	29990.000	2.24E-21	2.15E-21	0.961
29445.000	5.78E-22	6.48E-22	1.122	29720.000	1.72E-21	1.66E-21	0.966	29995.000	2.14E-21	1.97E-21	0.921
29450.000	5.76E-22	5.88E-22	1.021	29725.000	1.53E-21	1.53E-21	0.887	30000.000	2.14E-21	1.88E-21	0.877
29455.000	5.68E-22	5.35E-22	0.943	29730.000	1.23E-21	1.06E-21	0.860	30005.000	2.16E-21	1.90E-21	0.877
29460.000	5.69E-22	5.42E-22	0.952	29735.000	9.93E-22	9.46E-22	0.953	30010.000	2.22E-21	1.94E-21	0.875
29465.000	5.48E-22	4.87E-22	0.889	29740.000	8.54E-22	8.62E-22	1.009	30015.000	2.17E-21	2.00E-21	0.920
29470.000	5.07E-22	4.91E-22	0.968	29745.000	7.85E-22	7.63E-22	0.972	30020.000	2.24E-21	2.03E-21	0.906
29475.000	4.63E-22	4.92E-22	1.062	29750.000	7.01E-22	7.81E-22	1.114	30025.000	2.23E-21	2.02E-21	0.907
29480.000	4.40E-22	3.62E-22	0.822	29755.000	6.99E-22	7.20E-22	1.029	30030.000	2.15E-21	1.97E-21	0.917
29485.000	4.39E-22	4.74E-22	1.080	29760.000	6.67E-22	7.06E-22	1.058	30035.000	2.00E-21	1.95E-21	0.975
29490.000	4.37E-22	5.27E-22	1.205	29765.000	6.62E-22	6.72E-22	1.016	30040.000	1.84E-21	1.70E-21	0.922
29495.000	4.45E-22	4.48E-22	1.007	29770.000	6.84E-22	6.69E-22	0.979	30045.000	1.57E-21	1.58E-21	1.008
29500.000	4.58E-22	4.55E-22	0.994	29775.000	7.13E-22	6.92E-22	0.971	30050.000	1.49E-21	1.45E-21	0.976
29505.000	4.71E-22	5.47E-22	1.162	29780.000	7.39E-22	6.52E-22	0.882	30055.000	1.40E-21	1.35E-21	0.961
29510.000	4.74E-22	4.14E-22	0.873	29785.000	7.41E-22	6.73E-22	0.908	30060.000	1.37E-21	1.28E-21	0.933
29515.000	5.01E-22	4.87E-22	0.972	29790.000	7.56E-22	7.02E-22	0.928	30065.000	1.38E-21	1.22E-21	0.887
29520.000	5.18E-22	5.41E-22	1.044	29795.000	7.37E-22	7.33E-22	0.995	30070.000	1.45E-21	1.26E-21	0.868
29525.000	5.34E-22	5.41E-22	1.013	29800.000	7.40E-22	6.55E-22	0.882	30075.000	1.53E-21	1.33E-21	0.867
29530.000	5.71E-22	6.15E-22	1.077	29805.000	7.65E-22	6.74E-22	0.882	30080.000	1.59E-21	1.35E-21	0.846
29535.000	6.14E-22	6.55E-22	1.066	29810.000	7.83E-22	7.22E-22	0.922	30085.000	1.62E-21	1.38E-21	0.855
29540.000	6.51E-22	7.42E-22	1.140	29815.000	8.09E-22	7.60E-22	0.940	30090.000	1.81E-21	1.49E-21	0.826
29545.000	7.06E-22	6.70E-22	0.949	29820.000	8.44E-22	7.89E-22	0.935	30095.000	1.90E-21	1.58E-21	0.832
29550.000	7.61E-22	7.88E-22	1.035	29825.000	8.86E-22	8.30E-22	0.937	30100.000	1.91E-21	1.64E-21	0.861
29555.000	8.24E-22	8.91E-22	1.081	29830.000	9.59E-22	9.67E-22	1.008	30105.000	2.17E-21	1.80E-21	0.828
29560.000	9.21E-22	9.93E-22	1.078	29835.000	1.03E-21	9.83E-22	0.955	30110.000	2.35E-21	1.92E-21	0.816
29565.000	9.97E-22	9.95E-22	0.998	29840.000	1.11E-21	9.97E-22	0.898	30115.000	2.49E-21	2.02E-21	0.813
29570.000	1.08E-21	1.02E-21	0.947	29845.000	1.19E-21	1.02E-21	0.861	30120.000	2.70E-21	2.15E-21	0.796
29575.000	1.19E-21	1.21E-21	1.015	29850.000	1.27E-21	1.11E-21	0.872	30125.000	2.87E-21	2.34E-21	0.814
29580.000	1.30E-21	1.26E-21	0.972	29855.000	1.37E-21	1.24E-21	0.908	30130.000	3.16E-21	2.55E-21	0.808
29585.000	1.41E-21	1.35E-21	0.961	29860.000	1.50E-21	1.35E-21	0.903	30135.000	3.41E-21	2.75E-21	0.805
29590.000	1.52E-21	1.54E-21	1.014	29865.000	1.61E-21	1.43E-21	0.888	30140.000	3.69E-21	2.89E-21	0.784
29595.000	1.67E-21	1.75E-21	1.051	29870.000	1.71E-21	1.54E-21	0.900	30145.000	4.10E-21	3.09E-21	0.754
29600.000	1.84E-21	1.98E-21	1.077	29875.000	1.83E-21	1.65E-21	0.901	30150.000	4.39E-21	3.52E-21	0.801
29605.000	2.00E-21	1.92E-21	0.958	29880.000	1.96E-21	1.75E-21	0.892	30155.000	4.77E-21	3.79E-21	0.795
29610.000	2.15E-21	2.22E-21	1.033	29885.000	2.01E-21	1.84E-21	0.918	30160.000	5.15E-21	4.05E-21	0.787
29615.000	2.38E-21	2.34E-21	0.981	29890.000	2.09E-21	1.85E-21	0.884	30165.000	5.74E-21	4.40E-21	0.766
29620.000	2.56E-21	2.65E-21	1.035	29895.000	2.22E-21	1.94E-21	0.873	30170.000	6.14E-21	4.83E-21	0.786
29625.000	2.79E-21	2.82E-21	1.009	29900.000	2.35E-21	2.10E-21	0.895	30175.000	6.69E-21	5.45E-21	0.815
29630.000	3.00E-21	3.07E-21	1.024	29905.000	2.53E-21	2.31E-21	0.913	30180.000	7.26E-21	5.96E-21	0.820
29635.000	3.21E-21	3.29E-21	1.024	29910.000	2.73E-21	2.48E-21	0.907	30185.000	7.72E-21	6.10E-21	0.790
29640.000	3.37E-21	3.45E-21	1.024	29915.000	3.06E-21	2.59E-21	0.846	30190.000	8.20E-21	6.62E-21	0.808
29645.000	3.48E-21	3.44E-21	0.988	29920.000	3.34E-21	2.89E-21	0.865	30195.000	8.50E-21	7.21E-21	0.848
29650.000	3.49E-21	3.29E-21	0.944	29925.000	3.62E-21	3.10E-21	0.855	30200.000	8.65E-21	7.28E-21	0.842
29655.000	3.29E-21	2.71E-21	0.824	29930.000	3.98E-21	3.46E-21	0.869	30205.000	8.33E-21	7.22E-21	0.866
29660.000	2.70E-21	2.38E-21	0.880	29935.000	4.34E-21	3.70E-21	0.853	30210.000	7.04E-21	6.93E-21	0.985
29665.000	1.99E-21	2.04E-21	1.023	29940.000	4.67E-21	3.95E-21	0.846	30215.000	5.72E-21	5.88E-21	1.028
29670.000	1.69E-21	1.69E-21	1.001	29945.000	5.07E-21	4.40E-21	0.867	30220.000	5.26E-21	4.88E-21	0.928
29675.000	1.52E-21	1.66E-21	1.095	29950.000	5.38E-21	4.75E-21	0.883	30225.000	5.25E-21	4.50E-21	0.857
29680.000	1.49E-21	1.57E-21	1.054	29955.000	5.64E-21	5.00E-21	0.887	30230.000	5.32E-21	4.41E-21	0.830
29685.000	1.51E-21	1.57E-21	1.037	29960.000	5.71E-21	5.00E-21	0.875	30235.000	5.53E-21	4.54E-21	0.821
29690.000	1.55E-21	1.56E-21	1.003	29965.000	5.59E-21	5.11E-21	0.915	30240.000	5.90E-21	4.63E-21	0.785
29695.000	1.62E-21	1.66E-21	1.024	29970.000	5.11E-21	4.84E-21	0.943	30245.000	6.17E-21	4.96E-21	0.804

Comparison of ozone cross sections at 195 K: HCO and Bass data with RATIO = Bass / HCO (3)

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
30250.000	6.56E-21	5.38E-21	0.820	30525.000	7.07E-21	6.03E-21	0.853	30800.000	9.59E-21	9.52E-21	0.993
30255.000	6.94E-21	5.49E-21	0.791	30530.000	7.29E-21	6.02E-21	0.826	30805.000	9.26E-21	8.88E-21	0.959
30260.000	7.18E-21	5.85E-21	0.814	30535.000	7.64E-21	6.13E-21	0.802	30810.000	9.23E-21	8.60E-21	0.932
30265.000	7.25E-21	6.13E-21	0.845	30540.000	8.04E-21	6.13E-21	0.825	30815.000	9.21E-21	8.58E-21	0.931
30270.000	7.07E-21	6.11E-21	0.864	30545.000	8.32E-21	6.88E-21	0.826	30820.000	9.22E-21	8.53E-21	0.925
30275.000	6.25E-21	5.85E-21	0.935	30550.000	8.32E-21	7.06E-21	0.829	30825.000	9.26E-21	8.65E-21	0.934
30280.000	4.78E-21	5.08E-21	1.062	30555.000	8.63E-21	7.09E-21	0.822	30830.000	9.46E-21	8.81E-21	0.932
30285.000	3.77E-21	3.72E-21	0.987	30560.000	8.37E-21	7.17E-21	0.857	30835.000	9.44E-21	8.89E-21	0.942
30290.000	3.22E-21	2.97E-21	0.921	30565.000	7.93E-21	6.84E-21	0.863	30840.000	9.20E-21	8.89E-21	0.967
30295.000	2.92E-21	2.65E-21	0.908	30570.000	6.91E-21	6.23E-21	0.902	30845.000	8.75E-21	8.61E-21	0.984
30300.000	2.79E-21	2.28E-21	0.817	30575.000	5.72E-21	5.45E-21	0.953	30850.000	7.96E-21	8.16E-21	1.025
30305.000	2.78E-21	2.25E-21	0.810	30580.000	5.01E-21	4.79E-21	0.956	30855.000	7.11E-21	7.38E-21	1.038
30310.000	2.84E-21	2.29E-21	0.806	30585.000	4.65E-21	4.05E-21	0.872	30860.000	6.52E-21	6.85E-21	1.051
30315.000	2.87E-21	2.29E-21	0.798	30590.000	4.40E-21	3.73E-21	0.848	30865.000	6.26E-21	6.35E-21	1.015
30320.000	2.80E-21	2.36E-21	0.842	30595.000	4.16E-21	3.70E-21	0.850	30870.000	6.19E-21	6.15E-21	0.994
30325.000	2.96E-21	2.42E-21	0.817	30600.000	4.46E-21	3.78E-21	0.848	30875.000	6.22E-21	6.07E-21	0.976
30330.000	3.04E-21	2.49E-21	0.818	30605.000	4.50E-21	3.76E-21	0.835	30880.000	6.29E-21	6.18E-21	0.927
30335.000	2.85E-21	2.45E-21	0.858	30610.000	4.58E-21	3.86E-21	0.843	30885.000	6.67E-21	6.45E-21	0.958
30340.000	2.77E-21	2.34E-21	0.845	30615.000	4.82E-21	3.99E-21	0.829	30890.000	6.74E-21	6.45E-21	0.936
30345.000	2.63E-21	2.22E-21	0.844	30620.000	4.89E-21	4.14E-21	0.847	30895.000	7.14E-21	6.68E-21	0.945
30350.000	2.55E-21	2.22E-21	0.870	30625.000	5.13E-21	4.33E-21	0.845	30900.000	7.51E-21	7.09E-21	0.946
30355.000	2.56E-21	2.12E-21	0.827	30630.000	5.25E-21	4.54E-21	0.865	30905.000	7.71E-21	7.45E-21	0.967
30360.000	2.60E-21	2.26E-21	0.868	30635.000	5.21E-21	4.66E-21	0.894	30910.000	8.38E-21	7.73E-21	0.922
30365.000	2.71E-21	2.25E-21	0.831	30640.000	5.52E-21	4.72E-21	0.855	30915.000	8.79E-21	8.16E-21	0.929
30370.000	2.83E-21	2.32E-21	0.819	30645.000	5.60E-21	4.97E-21	0.887	30920.000	9.17E-21	8.83E-21	0.963
30375.000	2.93E-21	2.36E-21	0.809	30650.000	5.89E-21	5.14E-21	0.873	30925.000	9.73E-21	9.39E-21	0.965
30380.000	3.13E-21	2.53E-21	0.825	30655.000	6.19E-21	5.42E-21	0.875	30930.000	1.03E-20	9.75E-21	0.946
30385.000	3.30E-21	2.72E-21	0.825	30660.000	6.58E-21	5.78E-21	0.878	30935.000	1.11E-20	1.02E-20	0.923
30390.000	3.54E-21	3.06E-21	0.812	30665.000	7.17E-21	6.17E-21	0.860	30940.000	1.18E-20	1.11E-20	0.937
30395.000	3.83E-21	3.06E-21	0.798	30670.000	7.39E-21	6.56E-21	0.888	30945.000	1.27E-20	1.20E-20	0.949
30400.000	3.99E-21	3.35E-21	0.839	30675.000	8.28E-21	6.94E-21	0.841	30950.000	1.37E-20	1.30E-20	0.947
30405.000	4.30E-21	3.52E-21	0.818	30680.000	8.79E-21	7.59E-21	0.863	30955.000	1.50E-20	1.37E-20	0.913
30410.000	4.68E-21	3.89E-21	0.831	30685.000	9.58E-21	8.30E-21	0.867	30960.000	1.58E-20	1.49E-20	0.943
30415.000	5.06E-21	4.03E-21	0.797	30690.000	1.04E-20	8.82E-21	0.877	30965.000	1.74E-20	1.60E-20	0.918
30420.000	5.48E-21	4.39E-21	0.801	30695.000	1.09E-20	9.56E-21	0.877	30970.000	1.84E-20	1.74E-20	0.945
30425.000	5.86E-21	4.85E-21	0.827	30700.000	1.18E-20	1.01E-20	0.853	30975.000	1.98E-20	1.84E-20	0.930
30430.000	6.48E-21	5.28E-21	0.814	30705.000	1.25E-20	1.11E-20	0.890	30980.000	2.05E-20	1.92E-20	0.939
30435.000	7.01E-21	5.69E-21	0.811	30710.000	1.30E-20	1.16E-20	0.894	30985.000	2.16E-20	2.02E-20	0.934
30440.000	7.50E-21	6.03E-21	0.804	30715.000	1.34E-20	1.20E-20	0.892	30990.000	2.11E-20	2.02E-20	0.936
30445.000	8.14E-21	6.62E-21	0.813	30720.000	1.28E-20	1.21E-20	0.948	30995.000	1.92E-20	2.04E-20	1.065
30450.000	9.02E-21	7.31E-21	0.810	30725.000	1.13E-20	1.18E-20	1.041	31000.000	1.65E-20	1.90E-20	1.153
30455.000	9.69E-21	7.98E-21	0.823	30730.000	1.11E-20	1.18E-20	0.971	31005.000	1.58E-20	1.69E-20	1.070
30460.000	1.06E-20	8.51E-21	0.803	30735.000	1.13E-20	1.04E-20	0.919	31010.000	1.61E-20	1.61E-20	0.959
30465.000	1.14E-20	9.07E-21	0.796	30740.000	1.19E-20	1.08E-20	0.887	31015.000	1.70E-20	1.64E-20	0.967
30470.000	1.22E-20	1.02E-20	0.838	30745.000	1.26E-20	1.10E-20	0.876	31020.000	1.78E-20	1.73E-20	0.972
30475.000	1.31E-20	1.09E-20	0.832	30750.000	1.40E-20	1.21E-20	0.864	31025.000	1.88E-20	1.82E-20	0.966
30480.000	1.37E-20	1.15E-20	0.839	30755.000	1.47E-20	1.32E-20	0.895	31030.000	2.03E-20	1.92E-20	0.946
30485.000	1.41E-20	1.17E-20	0.832	30760.000	1.57E-20	1.42E-20	0.904	31035.000	2.11E-20	2.04E-20	0.965
30490.000	1.42E-20	1.20E-20	0.847	30765.000	1.66E-20	1.49E-20	0.896	31040.000	2.21E-20	2.15E-20	0.972
30495.000	1.35E-20	1.17E-20	0.864	30770.000	1.76E-20	1.55E-20	0.879	31045.000	2.23E-20	2.21E-20	0.990
30500.000	1.21E-20	1.05E-20	0.869	30775.000	1.81E-20	1.65E-20	0.907	31050.000	2.16E-20	2.21E-20	1.022
30505.000	1.05E-20	9.31E-21	0.887	30780.000	1.79E-20	1.65E-20	0.922	31055.000	1.92E-20	2.16E-20	1.124
30510.000	8.32E-21	6.32E-21	1.000	30785.000	1.68E-20	1.66E-20	0.985	31060.000	1.59E-20	1.87E-20	1.175
30515.000	7.27E-21	6.69E-21	0.920	30790.000	1.32E-20	1.50E-20	1.138	31065.000	1.38E-20	1.54E-20	1.113
30520.000	7.07E-21	5.97E-21	0.845	30795.000	1.08E-20	1.17E-20	1.084	31070.000	1.25E-20	1.34E-20	1.072

(4)

Comparison of ozone cross sections at 195 K: HCO and Bass data with $\text{RATIO} = \text{Bass} / \text{HCO}$

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
31075.000	1.19E-20	1.28E-20	1.073	31350.000	1.81E-20	2.02E-20	1.117	31625.000	3.34E-20	3.50E-20	1.048
31080.000	1.16E-20	1.21E-20	1.042	31355.000	1.85E-20	2.06E-20	1.111	31630.000	3.37E-20	3.61E-20	1.070
31085.000	1.18E-20	1.18E-20	1.003	31360.000	1.90E-20	2.06E-20	1.084	31635.000	3.45E-20	3.78E-20	1.095
31090.000	1.20E-20	1.20E-20	0.998	31365.000	1.94E-20	2.14E-20	1.105	31640.000	3.57E-20	3.87E-20	1.084
31095.000	1.23E-20	1.22E-20	0.996	31370.000	1.96E-20	2.15E-20	1.097	31645.000	3.72E-20	3.93E-20	1.058
31100.000	1.24E-20	1.23E-20	0.995	31375.000	2.01E-20	2.10E-20	1.046	31650.000	3.83E-20	4.09E-20	1.068
31105.000	1.25E-20	1.26E-20	1.006	31380.000	2.00E-20	2.15E-20	1.076	31655.000	3.96E-20	4.22E-20	1.065
31110.000	1.23E-20	1.27E-20	1.030	31385.000	2.01E-20	2.28E-20	1.136	31660.000	4.10E-20	4.39E-20	1.071
31115.000	1.20E-20	1.24E-20	1.037	31390.000	2.01E-20	2.29E-20	1.138	31665.000	4.20E-20	4.40E-20	1.047
31120.000	1.18E-20	1.22E-20	1.036	31395.000	2.10E-20	2.35E-20	1.120	31670.000	4.34E-20	4.44E-20	1.023
31125.000	1.15E-20	1.20E-20	1.044	31400.000	2.14E-20	2.42E-20	1.132	31675.000	4.48E-20	4.58E-20	1.023
31130.000	1.13E-20	1.17E-20	1.032	31405.000	2.28E-20	2.59E-20	1.134	31680.000	4.60E-20	4.68E-20	1.017
31135.000	1.12E-20	1.15E-20	1.028	31410.000	2.36E-20	2.73E-20	1.159	31685.000	4.63E-20	4.57E-20	0.988
31140.000	1.12E-20	1.15E-20	1.031	31415.000	2.48E-20	2.82E-20	1.137	31690.000	4.59E-20	4.43E-20	0.964
31145.000	1.16E-20	1.16E-20	0.997	31420.000	2.57E-20	2.89E-20	1.125	31695.000	4.47E-20	4.27E-20	0.954
31150.000	1.20E-20	1.18E-20	0.985	31425.000	2.72E-20	2.92E-20	1.074	31700.000	4.25E-20	4.08E-20	0.960
31155.000	1.26E-20	1.23E-20	0.979	31430.000	2.83E-20	2.93E-20	1.035	31705.000	4.07E-20	3.98E-20	0.977
31160.000	1.35E-20	1.30E-20	0.965	31435.000	2.82E-20	2.97E-20	1.051	31710.000	3.93E-20	3.83E-20	0.976
31165.000	1.40E-20	1.39E-20	0.992	31440.000	2.77E-20	3.07E-20	1.110	31715.000	3.85E-20	3.84E-20	0.998
31170.000	1.48E-20	1.45E-20	0.978	31445.000	2.84E-20	3.19E-20	1.122	31720.000	3.80E-20	3.86E-20	1.015
31175.000	1.58E-20	1.52E-20	0.959	31450.000	2.91E-20	3.31E-20	1.139	31725.000	3.81E-20	3.87E-20	1.016
31180.000	1.66E-20	1.61E-20	0.970	31455.000	3.06E-20	3.44E-20	1.125	31730.000	3.77E-20	4.00E-20	1.061
31185.000	1.72E-20	1.70E-20	0.991	31460.000	3.22E-20	3.60E-20	1.118	31735.000	3.83E-20	4.06E-20	1.060
31190.000	1.77E-20	1.77E-20	0.999	31465.000	3.34E-20	3.66E-20	1.096	31740.000	3.86E-20	4.02E-20	1.042
31195.000	1.74E-20	1.81E-20	1.038	31470.000	3.48E-20	3.63E-20	1.042	31745.000	3.90E-20	4.00E-20	1.014
31200.000	1.79E-20	1.81E-20	1.013	31475.000	3.50E-20	3.55E-20	1.013	31750.000	3.95E-20	4.01E-20	1.018
31205.000	1.86E-20	1.84E-20	0.989	31480.000	3.56E-20	3.33E-20	0.936	31755.000	3.96E-20	3.95E-20	0.998
31210.000	1.99E-20	1.95E-20	0.981	31485.000	3.44E-20	3.16E-20	0.917	31760.000	3.90E-20	3.90E-20	1.009
31215.000	2.10E-20	2.07E-20	0.986	31490.000	3.16E-20	3.05E-20	0.966	31765.000	3.87E-20	3.90E-20	1.018
31220.000	2.26E-20	2.18E-20	0.963	31495.000	3.00E-20	3.07E-20	1.024	31770.000	3.82E-20	3.86E-20	1.011
31225.000	2.39E-20	2.28E-20	0.955	31500.000	2.92E-20	3.13E-20	1.072	31775.000	3.79E-20	3.83E-20	1.011
31230.000	2.56E-20	2.46E-20	0.962	31505.000	2.96E-20	3.20E-20	1.080	31780.000	3.77E-20	3.85E-20	1.021
31235.000	2.70E-20	2.62E-20	0.969	31510.000	3.02E-20	3.22E-20	1.066	31785.000	3.80E-20	3.94E-20	1.038
31240.000	2.79E-20	2.74E-20	0.980	31515.000	3.11E-20	3.19E-20	1.025	31790.000	3.86E-20	4.00E-20	1.035
31245.000	2.81E-20	2.45E-20	0.874	31520.000	3.16E-20	3.22E-20	1.019	31795.000	3.95E-20	4.13E-20	1.045
31250.000	2.64E-20	2.33E-20	0.882	31525.000	3.21E-20	3.28E-20	1.022	31800.000	4.08E-20	4.28E-20	1.048
31255.000	2.34E-20	2.35E-20	1.006	31530.000	3.21E-20	3.22E-20	1.005	31805.000	4.15E-20	4.34E-20	1.046
31260.000	2.25E-20	2.43E-20	1.081	31535.000	3.19E-20	3.10E-20	0.971	31810.000	4.32E-20	4.44E-20	1.028
31265.000	2.25E-20	2.44E-20	1.082	31540.000	3.11E-20	3.02E-20	0.971	31815.000	4.43E-20	4.60E-20	1.039
31270.000	2.25E-20	2.52E-20	1.119	31545.000	2.99E-20	2.90E-20	0.971	31820.000	4.48E-20	4.74E-20	1.059
31275.000	2.36E-20	2.64E-20	1.117	31550.000	2.87E-20	2.81E-20	0.979	31825.000	4.62E-20	4.86E-20	1.053
31280.000	2.47E-20	2.68E-20	1.086	31555.000	2.77E-20	2.86E-20	1.032	31830.000	4.74E-20	5.03E-20	1.062
31285.000	2.48E-20	2.61E-20	1.051	31560.000	2.71E-20	2.90E-20	1.069	31835.000	4.84E-20	5.13E-20	1.061
31290.000	2.57E-20	2.50E-20	0.973	31565.000	2.73E-20	2.94E-20	1.078	31840.000	4.95E-20	5.14E-20	1.039
31295.000	2.61E-20	2.50E-20	0.956	31570.000	2.78E-20	2.97E-20	1.070	31845.000	5.07E-20	5.19E-20	1.023
31300.000	2.55E-20	2.34E-20	0.877	31575.000	2.84E-20	3.03E-20	1.066	31850.000	5.16E-20	5.22E-20	1.011
31305.000	2.39E-20	2.04E-20	0.852	31580.000	2.90E-20	3.14E-20	1.083	31855.000	5.25E-20	5.39E-20	1.026
31310.000	2.16E-20	1.85E-20	0.858	31585.000	2.97E-20	3.21E-20	1.081	31860.000	5.34E-20	5.58E-20	1.044
31315.000	1.94E-20	1.77E-20	0.912	31590.000	3.04E-20	3.23E-20	1.064	31865.000	5.47E-20	5.64E-20	1.032
31320.000	1.82E-20	1.79E-20	0.981	31595.000	3.13E-20	3.23E-20	1.032	31870.000	5.60E-20	5.65E-20	1.009
31325.000	1.73E-20	1.79E-20	1.043	31600.000	3.17E-20	3.32E-20	1.049	31875.000	5.69E-20	5.74E-20	1.008
31330.000	1.70E-20	1.45E-20	1.086	31605.000	3.19E-20	3.47E-20	1.087	31880.000	5.80E-20	5.84E-20	1.006
31335.000	1.70E-20	1.46E-20	1.094	31610.000	3.27E-20	3.49E-20	1.067	31885.000	5.84E-20	5.89E-20	1.008
31340.000	1.72E-20	1.31E-20	1.654	31615.000	3.31E-20	3.44E-20	1.040	31890.000	5.84E-20	6.01E-20	1.028
31345.000	1.76E-20	1.44E-20	1.092	31620.000	3.34E-20	3.44E-20	1.026	31895.000	5.83E-20	5.97E-20	1.020

(5)

Comparison of ozone cross sections at 195 K: HCO and Bass data with $\text{RATIO} = \text{Bass} / \text{HCO}$

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
31900.000	5.76E-20	5.83E-20	1.012	32175.000	7.75E-20	7.81E-20	1.008	32450.000	1.15E-19	1.15E-19	0.998
31905.000	5.71E-20	5.64E-20	0.987	32180.000	7.77E-20	7.83E-20	1.007	32455.000	1.15E-19	1.14E-19	0.995
31910.000	5.57E-20	5.52E-20	0.991	32185.000	7.80E-20	7.83E-20	1.004	32460.000	1.15E-19	1.14E-19	0.996
31915.000	5.38E-20	5.38E-20	1.000	32190.000	7.80E-20	7.88E-20	1.011	32465.000	1.15E-19	1.14E-19	0.992
31920.000	5.29E-20	5.36E-20	1.013	32195.000	7.87E-20	7.98E-20	1.014	32470.000	1.15E-19	1.14E-19	0.990
31925.000	5.25E-20	5.39E-20	1.026	32200.000	7.93E-20	8.01E-20	1.010	32475.000	1.14E-19	1.14E-19	0.997
31930.000	5.27E-20	5.48E-20	1.039	32205.000	8.09E-20	8.11E-20	1.002	32480.000	1.14E-19	1.13E-19	0.994
31935.000	5.28E-20	5.38E-20	1.020	32210.000	8.23E-20	8.30E-20	1.008	32485.000	1.13E-19	1.12E-19	0.995
31940.000	5.34E-20	5.25E-20	0.984	32215.000	8.26E-20	8.33E-20	1.009	32490.000	1.12E-19	1.13E-19	1.005
31945.000	5.36E-20	5.40E-20	1.007	32220.000	8.35E-20	8.35E-20	1.000	32495.000	1.13E-19	1.12E-19	0.992
31950.000	5.37E-20	5.42E-20	1.009	32225.000	8.37E-20	8.36E-20	0.999	32500.000	1.13E-19	1.11E-19	0.985
31955.000	5.36E-20	5.48E-20	1.022	32230.000	8.29E-20	8.26E-20	1.000	32505.000	1.14E-19	1.12E-19	0.983
31960.000	5.32E-20	5.39E-20	1.013	32235.000	8.18E-20	8.26E-20	1.010	32510.000	1.13E-19	1.13E-19	1.004
31965.000	5.35E-20	5.52E-20	1.031	32240.000	8.16E-20	8.22E-20	1.007	32515.000	1.14E-19	1.14E-19	1.002
31970.000	5.38E-20	5.51E-20	1.025	32245.000	8.05E-20	8.16E-20	1.014	32520.000	1.15E-19	1.15E-19	0.996
31975.000	5.44E-20	5.50E-20	1.012	32250.000	8.12E-20	8.11E-20	0.999	32525.000	1.18E-19	1.16E-19	0.981
31980.000	5.48E-20	5.55E-20	1.013	32255.000	8.21E-20	8.21E-20	1.000	32530.000	1.18E-19	1.17E-19	0.995
31985.000	5.51E-20	5.59E-20	1.015	32260.000	8.09E-20	8.24E-20	1.018	32535.000	1.19E-19	1.18E-19	0.993
31990.000	5.60E-20	5.71E-20	1.020	32265.000	8.16E-20	8.22E-20	1.008	32540.000	1.21E-19	1.19E-19	0.985
31995.000	5.64E-20	5.74E-20	1.018	32270.000	8.24E-20	8.23E-20	0.999	32545.000	1.22E-19	1.21E-19	0.990
32000.000	5.73E-20	5.80E-20	1.012	32275.000	8.17E-20	8.30E-20	1.017	32550.000	1.23E-19	1.22E-19	0.990
32005.000	5.80E-20	5.92E-20	1.021	32280.000	8.18E-20	8.27E-20	1.011	32555.000	1.25E-19	1.23E-19	0.988
32010.000	5.90E-20	6.02E-20	1.020	32285.000	8.29E-20	8.32E-20	1.004	32560.000	1.28E-19	1.26E-19	0.986
32015.000	5.94E-20	6.09E-20	1.026	32290.000	8.42E-20	8.36E-20	0.993	32565.000	1.29E-19	1.28E-19	0.995
32020.000	5.99E-20	6.16E-20	1.028	32295.000	8.43E-20	8.57E-20	1.017	32570.000	1.31E-19	1.30E-19	0.990
32025.000	6.08E-20	6.11E-20	1.005	32300.000	8.63E-20	8.75E-20	1.014	32575.000	1.33E-19	1.31E-19	0.974
32030.000	6.01E-20	6.18E-20	1.029	32305.000	8.84E-20	8.84E-20	1.000	32580.000	1.36E-19	1.34E-19	0.987
32035.000	6.08E-20	6.21E-20	1.021	32310.000	8.98E-20	8.98E-20	1.000	32585.000	1.37E-19	1.35E-19	0.988
32040.000	6.17E-20	6.23E-20	1.010	32315.000	9.31E-20	9.33E-20	1.002	32590.000	1.37E-19	1.37E-19	1.001
32045.000	6.24E-20	6.35E-20	1.017	32320.000	9.63E-20	9.62E-20	0.999	32595.000	1.38E-19	1.38E-19	1.001
32050.000	6.35E-20	6.44E-20	1.014	32325.000	9.76E-20	9.72E-20	0.996	32600.000	1.39E-19	1.39E-19	0.998
32055.000	6.40E-20	6.48E-20	1.012	32330.000	9.82E-20	9.83E-20	1.001	32605.000	1.40E-19	1.40E-19	0.999
32060.000	6.52E-20	6.56E-20	1.006	32335.000	9.94E-20	9.91E-20	0.997	32610.000	1.41E-19	1.42E-19	1.004
32065.000	6.61E-20	6.72E-20	1.017	32340.000	1.00E-19	1.00E-19	1.004	32615.000	1.43E-19	1.43E-19	0.998
32070.000	6.74E-20	6.91E-20	1.026	32345.000	1.02E-19	1.02E-19	1.000	32620.000	1.46E-19	1.46E-19	0.989
32075.000	6.90E-20	7.04E-20	1.020	32350.000	1.03E-19	1.03E-19	1.003	32625.000	1.46E-19	1.46E-19	0.997
32080.000	7.01E-20	7.13E-20	1.017	32355.000	1.04E-19	1.04E-19	0.999	32630.000	1.48E-19	1.47E-19	0.996
32085.000	7.22E-20	7.27E-20	1.008	32360.000	1.03E-19	1.03E-19	1.000	32635.000	1.50E-19	1.50E-19	0.999
32090.000	7.34E-20	7.42E-20	1.011	32365.000	1.05E-19	1.04E-19	0.987	32640.000	1.51E-19	1.51E-19	0.997
32095.000	7.42E-20	7.52E-20	1.013	32370.000	1.05E-19	1.05E-19	0.999	32645.000	1.51E-19	1.51E-19	0.999
32100.000	7.52E-20	7.57E-20	1.007	32375.000	1.06E-19	1.05E-19	0.990	32650.000	1.52E-19	1.52E-19	1.000
32105.000	7.64E-20	7.69E-20	1.007	32380.000	1.06E-19	1.06E-19	1.003	32655.000	1.51E-19	1.51E-19	0.998
32110.000	7.59E-20	7.65E-20	1.008	32385.000	1.06E-19	1.07E-19	1.012	32660.000	1.50E-19	1.50E-19	1.005
32115.000	7.59E-20	7.54E-20	0.993	32390.000	1.07E-19	1.07E-19	0.997	32665.000	1.50E-19	1.50E-19	1.004
32120.000	7.51E-20	7.56E-20	1.007	32395.000	1.07E-19	1.07E-19	1.005	32670.000	1.50E-19	1.50E-19	0.999
32125.000	7.45E-20	7.45E-20	1.000	32400.000	1.06E-19	1.07E-19	1.010	32675.000	1.51E-19	1.51E-19	0.998
32130.000	7.31E-20	7.38E-20	1.009	32405.000	1.05E-19	1.05E-19	1.003	32680.000	1.52E-19	1.51E-19	0.991
32135.000	7.33E-20	7.41E-20	1.011	32410.000	1.06E-19	1.05E-19	0.994	32685.000	1.52E-19	1.52E-19	1.001
32140.000	7.37E-20	7.49E-20	1.016	32415.000	1.08E-19	1.06E-19	0.981	32690.000	1.53E-19	1.54E-19	1.004
32145.000	7.41E-20	7.40E-20	0.999	32420.000	1.09E-19	1.07E-19	0.985	32695.000	1.53E-19	1.54E-19	0.995
32150.000	7.44E-20	7.43E-20	0.999	32425.000	1.10E-19	1.09E-19	0.994	32700.000	1.56E-19	1.55E-19	0.991
32155.000	7.50E-20	7.61E-20	1.015	32430.000	1.13E-19	1.12E-19	0.990	32705.000	1.54E-19	1.55E-19	1.007
32160.000	7.50E-20	7.53E-20	1.003	32435.000	1.14E-19	1.13E-19	0.991	32710.000	1.54E-19	1.55E-19	0.999
32165.000	7.59E-20	7.70E-20	1.014	32440.000	1.14E-19	1.14E-19	0.996	32715.000	1.54E-19	1.55E-19	1.004
32170.000	7.69E-20	7.76E-20	1.009	32445.000	1.16E-19	1.14E-19	0.987	32720.000	1.53E-19	1.55E-19	1.010

(6)

Comparison of ozone cross sections at 195 K: HCO and Bass data with $\text{RATIO} = \text{Bass} / \text{HCO}$

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
32725.000	1.53E-19	1.54E-19	1.009	33000.000	2.18E-19	2.21E-19	1.013	33275.000	3.24E-19	3.28E-19	1.012
32730.000	1.52E-19	1.56E-19	1.027	33005.000	2.21E-19	2.23E-19	1.009	33280.000	3.29E-19	3.26E-19	0.996
32735.000	1.55E-19	1.56E-19	1.003	33010.000	2.24E-19	2.25E-19	1.004	33285.000	3.23E-19	3.29E-19	1.020
32740.000	1.54E-19	1.55E-19	1.008	33015.000	2.26E-19	2.29E-19	1.011	33290.000	3.32E-19	3.31E-19	0.998
32745.000	1.56E-19	1.57E-19	1.009	33020.000	2.27E-19	2.31E-19	1.019	33295.000	3.30E-19	3.33E-19	1.010
32750.000	1.56E-19	1.58E-19	1.012	33025.000	2.32E-19	2.33E-19	1.004	33300.000	3.37E-19	3.38E-19	0.993
32755.000	1.59E-19	1.58E-19	0.995	33030.000	2.34E-19	2.35E-19	1.003	33305.000	3.35E-19	3.38E-19	1.008
32760.000	1.61E-19	1.60E-19	0.994	33035.000	2.36E-19	2.37E-19	1.006	33310.000	3.36E-19	3.40E-19	1.012
32765.000	1.64E-19	1.62E-19	0.986	33040.000	2.40E-19	2.40E-19	1.000	33315.000	3.42E-19	3.42E-19	1.000
32770.000	1.63E-19	1.63E-19	1.002	33045.000	2.43E-19	2.42E-19	0.997	33320.000	3.35E-19	3.44E-19	1.015
32775.000	1.65E-19	1.65E-19	0.998	33050.000	2.43E-19	2.44E-19	1.004	33325.000	3.47E-19	3.46E-19	0.996
32780.000	1.67E-19	1.66E-19	0.996	33055.000	2.45E-19	2.46E-19	1.005	33330.000	3.47E-19	3.50E-19	1.006
32785.000	1.68E-19	1.68E-19	0.998	33060.000	2.47E-19	2.49E-19	1.006	33335.000	3.46E-19	3.50E-19	1.007
32790.000	1.72E-19	1.69E-19	0.981	33065.000	2.51E-19	2.52E-19	1.003	33340.000	3.50E-19	3.44E-19	0.982
32795.000	1.74E-19	1.71E-19	0.980	33070.000	2.53E-19	2.53E-19	1.000	33345.000	3.48E-19	3.47E-19	0.997
32800.000	1.75E-19	1.73E-19	0.983	33075.000	2.56E-19	2.56E-19	0.999	33350.000	3.47E-19	3.53E-19	1.016
32805.000	1.76E-19	1.76E-19	1.004	33080.000	2.57E-19	2.56E-19	0.997	33355.000	3.52E-19	3.55E-19	1.008
32810.000	1.79E-19	1.78E-19	0.996	33085.000	2.58E-19	2.59E-19	1.002	33360.000	3.54E-19	3.55E-19	1.005
32815.000	1.80E-19	1.80E-19	0.997	33090.000	2.60E-19	2.60E-19	1.001	33365.000	3.55E-19	3.57E-19	1.002
32820.000	1.84E-19	1.84E-19	1.001	33095.000	2.62E-19	2.62E-19	0.999	33370.000	3.55E-19	3.62E-19	1.019
32825.000	1.87E-19	1.86E-19	0.994	33100.000	2.63E-19	2.63E-19	1.002	33375.000	3.57E-19	3.64E-19	1.021
32830.000	1.87E-19	1.87E-19	1.003	33105.000	2.65E-19	2.65E-19	0.996	33380.000	3.61E-19	3.63E-19	1.006
32835.000	1.89E-19	1.89E-19	1.000	33110.000	2.67E-19	2.66E-19	0.995	33385.000	3.67E-19	3.69E-19	1.004
32840.000	1.90E-19	1.90E-19	1.002	33115.000	2.66E-19	2.67E-19	1.005	33390.000	3.68E-19	3.69E-19	1.003
32845.000	1.90E-19	1.91E-19	1.007	33120.000	2.67E-19	2.69E-19	1.008	33395.000	3.73E-19	3.75E-19	1.017
32850.000	1.92E-19	1.93E-19	1.003	33125.000	2.68E-19	2.70E-19	1.006	33400.000	3.75E-19	3.81E-19	1.017
32855.000	1.94E-19	1.94E-19	1.000	33130.000	2.68E-19	2.68E-19	1.002	33405.000	3.78E-19	3.87E-19	1.025
32860.000	1.95E-19	1.95E-19	1.002	33135.000	2.69E-19	2.70E-19	1.004	33410.000	3.81E-19	3.88E-19	1.018
32865.000	1.97E-19	1.97E-19	1.000	33140.000	2.69E-19	2.70E-19	1.004	33415.000	3.88E-19	3.89E-19	1.002
32870.000	1.97E-19	1.99E-19	1.012	33145.000	2.70E-19	2.70E-19	1.000	33420.000	3.88E-19	3.91E-19	1.009
32875.000	2.01E-19	2.02E-19	1.007	33150.000	2.70E-19	2.70E-19	1.002	33425.000	3.93E-19	3.94E-19	1.003
32880.000	2.03E-19	2.03E-19	1.000	33155.000	2.72E-19	2.71E-19	0.997	33430.000	4.00E-19	4.04E-19	1.011
32885.000	2.05E-19	2.04E-19	0.997	33160.000	2.74E-19	2.72E-19	0.994	33435.000	4.03E-19	4.10E-19	1.016
32890.000	2.05E-19	2.07E-19	1.008	33165.000	2.75E-19	2.73E-19	0.994	33440.000	4.07E-19	4.02E-19	0.988
32900.000	2.05E-19	2.06E-19	1.008	33170.000	2.75E-19	2.75E-19	1.000	33445.000	4.10E-19	4.09E-19	0.997
32905.000	2.03E-19	2.05E-19	1.009	33175.000	2.78E-19	2.77E-19	0.998	33450.000	4.11E-19	4.16E-19	1.011
32910.000	2.04E-19	2.05E-19	1.005	33180.000	2.79E-19	2.79E-19	1.000	33455.000	4.15E-19	4.18E-19	1.008
32915.000	2.03E-19	2.05E-19	1.012	33185.000	2.82E-19	2.81E-19	0.997	33460.000	4.18E-19	4.19E-19	1.002
32920.000	2.04E-19	2.06E-19	1.010	33190.000	2.84E-19	2.83E-19	0.995	33465.000	4.19E-19	4.19E-19	0.999
32925.000	2.03E-19	2.07E-19	1.017	33195.000	2.84E-19	2.84E-19	1.001	33470.000	4.20E-19	4.18E-19	0.995
32930.000	2.05E-19	2.06E-19	1.006	33200.000	2.87E-19	2.86E-19	0.996	33475.000	4.20E-19	4.21E-19	1.003
32935.000	2.07E-19	2.06E-19	0.998	33205.000	2.91E-19	2.90E-19	0.996	33480.000	4.21E-19	4.26E-19	1.013
32940.000	2.06E-19	2.08E-19	1.012	33210.000	2.96E-19	2.93E-19	0.990	33485.000	4.20E-19	4.28E-19	1.018
32945.000	2.07E-19	2.10E-19	1.013	33215.000	2.97E-19	2.96E-19	0.995	33490.000	4.25E-19	4.28E-19	1.008
32950.000	2.06E-19	2.10E-19	1.022	33220.000	3.02E-19	2.99E-19	0.991	33495.000	4.25E-19	4.29E-19	1.009
32955.000	2.09E-19	2.11E-19	1.012	33225.000	3.07E-19	3.03E-19	0.987	33500.000	4.26E-19	4.30E-19	1.010
32960.000	2.09E-19	2.12E-19	1.012	33230.000	3.09E-19	3.06E-19	0.985	33505.000	4.31E-19	4.33E-19	1.006
32965.000	2.10E-19	2.13E-19	1.012	33235.000	3.12E-19	3.07E-19	0.985	33510.000	4.34E-19	4.37E-19	1.006
32970.000	2.11E-19	2.14E-19	1.014	33240.000	3.12E-19	3.12E-19	1.002	33515.000	4.35E-19	4.39E-19	1.009
32975.000	2.13E-19	2.15E-19	1.008	33245.000	3.19E-19	3.15E-19	0.989	33520.000	4.36E-19	4.41E-19	1.013
32980.000	2.14E-19	2.15E-19	1.006	33250.000	3.21E-19	3.18E-19	0.989	33525.000	4.39E-19	4.45E-19	1.014
32985.000	2.17E-19	2.17E-19	1.022	33255.000	3.20E-19	3.21E-19	1.003	33530.000	4.41E-19	4.43E-19	1.006
32990.000	2.17E-19	2.18E-19	1.006	33260.000	3.23E-19	3.24E-19	1.011	33535.000	4.40E-19	4.42E-19	1.005
32995.000	2.16E-19	2.20E-19	1.017	33265.000	3.23E-19	3.27E-19	1.011	33540.000	4.45E-19	4.44E-19	0.997
				33270.000	3.25E-19	3.27E-19	1.008	33545.000	4.46E-19	4.48E-19	1.004

Comparison of ozone cross sections at 195 K: HCO and Bass data with RATIO = Bass / HCO (7)

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
33550.000	4.52E-19	4.52E-19	1.000	33825.000	6.21E-19	6.28E-19	1.010	34100.000	8.72E-19	8.76E-19	1.005
33555.000	4.54E-19	4.55E-19	1.001	33830.000	6.28E-19	6.34E-19	1.006	34105.000	8.79E-19	8.87E-19	1.009
33560.000	4.56E-19	4.57E-19	1.002	33835.000	6.29E-19	6.34E-19	1.008	34110.000	8.85E-19	8.97E-19	1.014
33565.000	4.57E-19	4.61E-19	1.009	33840.000	6.35E-19	6.38E-19	1.005	34115.000	8.90E-19	9.01E-19	1.012
33570.000	4.59E-19	4.67E-19	1.016	33845.000	6.42E-19	6.41E-19	0.998	34120.000	8.96E-19	8.98E-19	1.002
33575.000	4.71E-19	4.66E-19	0.989	33850.000	6.48E-19	6.47E-19	0.999	34125.000	9.07E-19	9.11E-19	1.004
33580.000	4.70E-19	4.67E-19	0.994	33855.000	6.52E-19	6.59E-19	1.011	34130.000	9.18E-19	9.15E-19	0.997
33585.000	4.70E-19	4.74E-19	1.009	33860.000	6.61E-19	6.70E-19	1.014	34135.000	9.23E-19	9.26E-19	1.003
33590.000	4.77E-19	4.78E-19	1.003	33865.000	6.68E-19	6.73E-19	1.007	34140.000	9.28E-19	9.36E-19	1.010
33595.000	4.79E-19	4.79E-19	1.001	33870.000	6.69E-19	6.72E-19	1.004	34145.000	9.33E-19	9.44E-19	1.012
33600.000	4.83E-19	4.83E-19	0.999	33875.000	6.79E-19	6.83E-19	1.005	34150.000	9.36E-19	9.48E-19	1.013
33605.000	4.89E-19	4.87E-19	0.995	33880.000	6.81E-19	6.89E-19	1.012	34155.000	9.42E-19	9.49E-19	1.008
33610.000	4.88E-19	4.90E-19	1.005	33885.000	6.89E-19	6.96E-19	1.011	34160.000	9.46E-19	9.57E-19	1.011
33615.000	4.93E-19	4.98E-19	1.011	33890.000	7.00E-19	7.02E-19	1.002	34165.000	9.50E-19	9.60E-19	1.011
33620.000	4.96E-19	5.02E-19	1.012	33895.000	7.02E-19	7.03E-19	1.002	34170.000	9.51E-19	9.61E-19	1.011
33625.000	4.98E-19	5.06E-19	1.016	33900.000	7.02E-19	7.05E-19	1.004	34175.000	9.54E-19	9.62E-19	1.009
33630.000	5.03E-19	5.09E-19	1.012	33905.000	7.05E-19	7.14E-19	1.011	34180.000	9.53E-19	9.65E-19	1.013
33635.000	5.09E-19	5.09E-19	1.001	33910.000	7.10E-19	7.21E-19	1.016	34185.000	9.54E-19	9.66E-19	1.013
33640.000	5.10E-19	5.11E-19	1.001	33915.000	7.20E-19	7.24E-19	1.006	34190.000	9.51E-19	9.65E-19	1.015
33645.000	5.15E-19	5.16E-19	1.003	33920.000	7.21E-19	7.27E-19	1.009	34195.000	9.58E-19	9.68E-19	1.010
33650.000	5.18E-19	5.23E-19	1.010	33925.000	7.29E-19	7.27E-19	0.998	34200.000	9.59E-19	9.72E-19	1.014
33655.000	5.20E-19	5.27E-19	1.013	33930.000	7.30E-19	7.28E-19	0.997	34205.000	9.58E-19	9.67E-19	1.009
33660.000	5.29E-19	5.31E-19	1.003	33935.000	7.31E-19	7.34E-19	1.004	34210.000	9.68E-19	9.75E-19	1.007
33665.000	5.34E-19	5.33E-19	0.999	33940.000	7.41E-19	7.42E-19	1.001	34215.000	9.73E-19	9.82E-19	1.012
33670.000	5.37E-19	5.37E-19	1.001	33945.000	7.41E-19	7.46E-19	1.007	34220.000	9.73E-19	9.82E-19	1.009
33675.000	5.45E-19	5.48E-19	1.005	33950.000	7.50E-19	7.56E-19	1.007	34225.000	9.75E-19	9.90E-19	1.015
33680.000	5.43E-19	5.51E-19	1.015	33955.000	7.46E-19	7.53E-19	1.010	34230.000	9.87E-19	9.98E-19	1.012
33685.000	5.51E-19	5.51E-19	1.000	33960.000	7.49E-19	7.53E-19	1.006	34235.000	9.87E-19	1.00E-18	1.017
33690.000	5.52E-19	5.51E-19	0.998	33965.000	7.60E-19	7.56E-19	0.995	34240.000	9.98E-19	1.00E-18	1.004
33695.000	5.55E-19	5.54E-19	0.998	33970.000	7.58E-19	7.61E-19	1.004	34245.000	1.00E-18	1.01E-18	1.007
33700.000	5.56E-19	5.58E-19	1.004	33975.000	7.68E-19	7.68E-19	1.000	34250.000	1.01E-18	1.01E-18	1.005
33705.000	5.52E-19	5.59E-19	1.012	33980.000	7.71E-19	7.75E-19	1.006	34255.000	1.01E-18	1.02E-18	1.011
33710.000	5.54E-19	5.56E-19	1.004	33985.000	7.71E-19	7.80E-19	1.009	34260.000	1.01E-18	1.03E-18	1.026
33715.000	5.55E-19	5.56E-19	1.003	33990.000	7.75E-19	7.81E-19	1.008	34265.000	1.01E-18	1.03E-18	1.021
33720.000	5.55E-19	5.64E-19	1.017	33995.000	7.75E-19	7.81E-19	1.005	34270.000	1.02E-18	1.03E-18	1.013
33725.000	5.56E-19	5.60E-19	1.007	34000.000	7.77E-19	7.81E-19	1.005	34275.000	1.02E-18	1.04E-18	1.018
33730.000	5.56E-19	5.60E-19	1.007	34005.000	7.75E-19	7.86E-19	1.017	34280.000	1.04E-18	1.05E-18	1.006
33735.000	5.60E-19	5.67E-19	1.013	34010.000	7.81E-19	7.84E-19	1.011	34285.000	1.05E-18	1.06E-18	1.008
33740.000	5.62E-19	5.68E-19	1.011	34015.000	7.73E-19	7.86E-19	1.017	34290.000	1.06E-18	1.07E-18	1.011
33745.000	5.66E-19	5.70E-19	1.008	34020.000	7.79E-19	7.87E-19	1.010	34295.000	1.07E-18	1.07E-18	1.004
33750.000	5.66E-19	5.69E-19	1.006	34025.000	7.85E-19	7.93E-19	1.011	34300.000	1.08E-18	1.08E-18	1.001
33755.000	5.66E-19	5.75E-19	1.016	34030.000	7.90E-19	7.93E-19	1.004	34305.000	1.09E-18	1.09E-18	1.002
33760.000	5.79E-19	5.80E-19	1.003	34035.000	7.93E-19	7.96E-19	1.003	34310.000	1.09E-18	1.10E-18	1.011
33765.000	5.82E-19	5.85E-19	1.006	34040.000	7.96E-19	8.03E-19	1.009	34315.000	1.11E-18	1.11E-18	1.012
33770.000	5.93E-19	5.93E-19	1.000	34045.000	8.06E-19	8.11E-19	1.006	34320.000	1.11E-18	1.12E-18	1.012
33775.000	5.96E-19	6.02E-19	1.010	34050.000	8.14E-19	8.13E-19	0.999	34325.000	1.11E-18	1.13E-18	1.016
33780.000	6.03E-19	6.06E-19	1.005	34055.000	8.10E-19	8.16E-19	1.007	34330.000	1.13E-18	1.13E-18	1.003
33785.000	6.05E-19	6.05E-19	1.001	34060.000	8.27E-19	8.18E-19	0.989	34335.000	1.13E-18	1.14E-18	1.005
33790.000	6.08E-19	6.11E-19	1.005	34065.000	8.27E-19	8.30E-19	1.003	34340.000	1.14E-18	1.15E-18	1.005
33795.000	6.14E-19	6.18E-19	1.006	34070.000	8.32E-19	8.39E-19	1.008	34345.000	1.16E-18	1.16E-18	1.006
33800.000	6.15E-19	6.22E-19	1.011	34075.000	8.37E-19	8.48E-19	1.013	34350.000	1.16E-18	1.17E-18	1.007
33805.000	6.21E-19	6.24E-19	1.004	34080.000	8.51E-19	8.55E-19	1.005	34355.000	1.16E-18	1.17E-18	1.010
33810.000	6.16E-19	6.25E-19	1.014	34085.000	8.56E-19	8.59E-19	1.004	34360.000	1.17E-18	1.18E-18	1.008
33815.000	6.19E-19	6.25E-19	1.010	34090.000	8.58E-19	8.66E-19	1.009	34365.000	1.17E-18	1.19E-18	1.013
33820.000	6.21E-19	6.27E-19	1.009	34095.000	8.63E-19	8.67E-19	1.005	34370.000	1.18E-18	1.20E-18	1.016

(8)

Comparison of ozone cross sections at 195 K: HCO and Bass data with RATIO = Bass / HCO

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
34375.000	1.18E-18	1.20E-18	1.019	34650.000	1.54E-18	1.54E-18	1.001	34925.000	2.05E-18	2.06E-18	1.005
34380.000	1.20E-18	1.21E-18	1.008	34655.000	1.54E-18	1.56E-18	1.011	34930.000	2.05E-18	2.06E-18	1.007
34385.000	1.21E-18	1.21E-18	1.003	34660.000	1.55E-18	1.56E-18	1.009	34935.000	2.06E-18	2.07E-18	1.007
34390.000	1.22E-18	1.22E-18	0.996	34665.000	1.56E-18	1.57E-18	1.004	34940.000	2.08E-18	2.10E-18	1.008
34395.000	1.22E-18	1.23E-18	1.007	34670.000	1.57E-18	1.57E-18	1.001	34945.000	2.08E-18	2.11E-18	1.013
34400.000	1.23E-18	1.23E-18	1.006	34675.000	1.56E-18	1.57E-18	1.006	34950.000	2.11E-18	2.12E-18	1.003
34405.000	1.23E-18	1.24E-18	1.008	34680.000	1.57E-18	1.58E-18	1.004	34955.000	2.09E-18	2.13E-18	1.019
34410.000	1.23E-18	1.24E-18	1.019	34685.000	1.58E-18	1.58E-18	1.001	34960.000	2.12E-18	2.15E-18	1.013
34415.000	1.23E-18	1.24E-18	1.020	34690.000	1.58E-18	1.59E-18	1.005	34965.000	2.13E-18	2.14E-18	1.005
34420.000	1.25E-18	1.25E-18	1.000	34695.000	1.58E-18	1.59E-18	0.009	34970.000	2.14E-18	2.15E-18	1.003
34425.000	1.25E-18	1.26E-18	1.007	34700.000	1.60E-18	1.60E-18	1.001	34975.000	2.14E-18	2.16E-18	1.008
34430.000	1.25E-18	1.26E-18	1.012	34705.000	1.61E-18	1.60E-18	0.997	34980.000	2.15E-18	2.17E-18	1.007
34435.000	1.26E-18	1.27E-18	1.010	34710.000	1.62E-18	1.61E-18	0.993	34985.000	2.14E-18	2.16E-18	1.012
34440.000	1.26E-18	1.27E-18	1.011	34715.000	1.63E-18	1.63E-18	0.999	34990.000	2.15E-18	2.17E-18	1.010
34445.000	1.26E-18	1.28E-18	1.014	34720.000	1.62E-18	1.64E-18	1.011	34995.000	2.14E-18	2.17E-18	1.015
34450.000	1.27E-18	1.28E-18	1.011	34725.000	1.64E-18	1.64E-18	1.004	35000.000	2.13E-18	2.17E-18	1.018
34455.000	1.27E-18	1.29E-18	1.014	34730.000	1.65E-18	1.66E-18	1.004	35005.000	2.14E-18	2.16E-18	1.012
34460.000	1.29E-18	1.30E-18	1.006	34735.000	1.66E-18	1.67E-18	1.005	35010.000	2.13E-18	2.17E-18	1.017
34465.000	1.29E-18	1.30E-18	1.011	34740.000	1.67E-18	1.68E-18	1.008	35015.000	2.13E-18	2.17E-18	1.019
34470.000	1.29E-18	1.31E-18	1.017	34745.000	1.68E-18	1.69E-18	1.004	35020.000	2.14E-18	2.17E-18	1.016
34475.000	1.30E-18	1.31E-18	1.010	34750.000	1.70E-18	1.70E-18	0.999	35025.000	2.14E-18	2.18E-18	1.019
34480.000	1.30E-18	1.32E-18	1.013	34755.000	1.72E-18	1.72E-18	0.998	35030.000	2.17E-18	2.19E-18	1.008
34485.000	1.31E-18	1.32E-18	1.009	34760.000	1.74E-18	1.73E-18	0.997	35035.000	2.16E-18	2.20E-18	1.017
34490.000	1.31E-18	1.32E-18	1.008	34765.000	1.74E-18	1.75E-18	1.005	35040.000	2.16E-18	2.21E-18	1.025
34495.000	1.31E-18	1.33E-18	1.013	34770.000	1.76E-18	1.77E-18	1.005	35045.000	2.20E-18	2.22E-18	1.009
34500.000	1.32E-18	1.33E-18	1.006	34775.000	1.78E-18	1.78E-18	1.002	35050.000	2.22E-18	2.24E-18	1.007
34505.000	1.32E-18	1.33E-18	1.009	34780.000	1.81E-18	1.80E-18	0.994	35055.000	2.23E-18	2.25E-18	1.010
34510.000	1.33E-18	1.34E-18	1.007	34785.000	1.82E-18	1.82E-18	0.999	35060.000	2.25E-18	2.27E-18	1.011
34515.000	1.34E-18	1.35E-18	1.008	34790.000	1.84E-18	1.84E-18	1.000	35065.000	2.26E-18	2.30E-18	1.016
34520.000	1.35E-18	1.36E-18	1.008	34795.000	1.84E-18	1.85E-18	1.006	35070.000	2.29E-18	2.31E-18	1.007
34525.000	1.35E-18	1.37E-18	1.012	34800.000	1.85E-18	1.86E-18	1.005	35075.000	2.30E-18	2.32E-18	1.008
34530.000	1.36E-18	1.37E-18	1.008	34805.000	1.87E-18	1.87E-18	1.001	35080.000	2.31E-18	2.33E-18	1.007
34535.000	1.38E-18	1.38E-18	1.000	34810.000	1.86E-18	1.86E-18	1.012	35085.000	2.35E-18	2.33E-18	0.993
34540.000	1.38E-18	1.39E-18	1.010	34815.000	1.88E-18	1.89E-18	1.005	35090.000	2.35E-18	2.35E-18	0.998
34545.000	1.39E-18	1.40E-18	0.997	34820.000	1.88E-18	1.89E-18	0.996	35095.000	2.37E-18	2.37E-18	1.006
34550.000	1.40E-18	1.40E-18	1.013	34825.000	1.90E-18	1.89E-18	1.009	35100.000	2.36E-18	2.39E-18	1.003
34555.000	1.40E-18	1.42E-18	1.013	34830.000	1.89E-18	1.91E-18	1.009	35105.000	2.38E-18	2.40E-18	0.998
34560.000	1.42E-18	1.43E-18	1.008	34835.000	1.92E-18	1.92E-18	1.008	35110.000	2.40E-18	2.40E-18	0.996
34565.000	1.43E-18	1.43E-18	1.001	34840.000	1.92E-18	1.92E-18	0.997	35115.000	2.41E-18	2.41E-18	0.998
34570.000	1.43E-18	1.44E-18	1.004	34845.000	1.92E-18	1.91E-18	1.005	35120.000	2.41E-18	2.42E-18	1.004
34575.000	1.43E-18	1.44E-18	1.010	34850.000	1.92E-18	1.92E-18	0.998	35125.000	2.42E-18	2.43E-18	1.003
34580.000	1.44E-18	1.45E-18	1.009	34855.000	1.90E-18	1.92E-18	1.013	35130.000	2.45E-18	2.43E-18	0.993
34585.000	1.45E-18	1.47E-18	1.013	34860.000	1.92E-18	1.93E-18	1.005	35135.000	2.46E-18	2.45E-18	0.995
34590.000	1.45E-18	1.47E-18	1.011	34865.000	1.93E-18	1.93E-18	1.002	35140.000	2.46E-18	2.46E-18	0.998
34595.000	1.46E-18	1.46E-18	1.003	34870.000	1.93E-18	1.93E-18	1.004	35145.000	2.46E-18	2.46E-18	0.998
34600.000	1.47E-18	1.47E-18	1.003	34875.000	1.94E-18	1.95E-18	1.001	35150.000	2.46E-18	2.46E-18	1.002
34605.000	1.48E-18	1.49E-18	1.004	34880.000	1.95E-18	1.95E-18	1.001	35155.000	2.46E-18	2.47E-18	1.005
34610.000	1.49E-18	1.49E-18	1.002	34885.000	1.96E-18	1.97E-18	1.003	35160.000	2.46E-18	2.48E-18	1.006
34615.000	1.50E-18	1.50E-18	1.003	34890.000	1.98E-18	1.98E-18	0.996	35165.000	2.46E-18	2.47E-18	1.006
34620.000	1.50E-18	1.50E-18	1.003	34895.000	1.98E-18	1.99E-18	1.002	35170.000	2.46E-18	2.47E-18	1.002
34625.000	1.51E-18	1.51E-18	1.002	34900.000	2.00E-18	2.00E-18	1.002	35175.000	2.49E-18	2.48E-18	0.998
34630.000	1.51E-18	1.52E-18	1.007	34905.000	2.01E-18	2.01E-18	1.004	35180.000	2.48E-18	2.49E-18	1.003
34635.000	1.51E-18	1.52E-18	1.012	34910.000	2.02E-18	2.03E-18	1.006	35185.000	2.51E-18	2.49E-18	0.992
34640.000	1.52E-18	1.54E-18	1.012	34915.000	2.03E-18	2.04E-18	1.012	35190.000	2.51E-18	2.50E-18	0.987
34645.000	1.53E-18	1.54E-18	1.004	34920.000	2.03E-18	2.05E-18	1.012	35195.000	2.53E-18		

Comparison of ozone cross sections at 195 K: HCO and Bass data with RATIO - Bass / HCO (9)

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
35200.000	2.52E-18	2.51E-18	0.997	35475.000	3.12E-18	3.08E-18	0.987	35750.000	4.04E-18	4.01E-18	0.993
35205.000	2.54E-18	2.53E-18	0.997	35480.000	3.15E-18	3.08E-18	0.977	35755.000	4.00E-18	4.00E-18	0.991
35210.000	2.57E-18	2.54E-18	0.990	35485.000	3.14E-18	3.08E-18	0.981	35760.000	4.02E-18	4.00E-18	0.996
35215.000	2.60E-18	2.57E-18	0.989	35490.000	3.15E-18	3.09E-18	0.982	35765.000	4.02E-18	4.01E-18	0.998
35220.000	2.61E-18	2.60E-18	0.997	35495.000	3.15E-18	3.11E-18	0.988	35770.000	4.04E-18	4.03E-18	0.996
35225.000	2.64E-18	2.62E-18	0.993	35500.000	3.19E-18	3.13E-18	0.980	35775.000	4.02E-18	4.03E-18	1.004
35230.000	2.65E-18	2.66E-18	1.003	35505.000	3.22E-18	3.14E-18	0.976	35780.000	4.05E-18	4.04E-18	0.997
35235.000	2.70E-18	2.67E-18	0.990	35510.000	3.21E-18	3.15E-18	0.983	35785.000	4.03E-18	4.07E-18	1.009
35240.000	2.72E-18	2.69E-18	0.990	35515.000	3.25E-18	3.18E-18	0.977	35790.000	4.07E-18	4.06E-18	0.998
35245.000	2.77E-18	2.72E-18	0.982	35520.000	3.28E-18	3.20E-18	0.975	35795.000	4.06E-18	4.07E-18	1.003
35250.000	2.79E-18	2.75E-18	0.984	35525.000	3.28E-18	3.20E-18	0.976	35800.000	4.04E-18	4.09E-18	1.012
35255.000	2.79E-18	2.79E-18	1.000	35530.000	3.31E-18	3.24E-18	0.978	35805.000	4.06E-18	4.09E-18	1.008
35260.000	2.84E-18	2.82E-18	0.992	35535.000	3.36E-18	3.27E-18	0.974	35810.000	4.11E-18	4.10E-18	0.999
35265.000	2.83E-18	2.83E-18	1.000	35540.000	3.40E-18	3.31E-18	0.972	35815.000	4.11E-18	4.13E-18	1.004
35270.000	2.84E-18	2.84E-18	0.999	35545.000	3.45E-18	3.33E-18	0.966	35820.000	4.14E-18	4.14E-18	1.000
35275.000	2.88E-18	2.86E-18	0.993	35550.000	3.45E-18	3.35E-18	0.972	35825.000	4.15E-18	4.14E-18	0.997
35280.000	2.90E-18	2.90E-18	0.999	35555.000	3.48E-18	3.37E-18	0.969	35830.000	4.16E-18	4.15E-18	0.997
35285.000	2.91E-18	2.90E-18	0.997	35560.000	3.49E-18	3.40E-18	0.974	35835.000	4.18E-18	4.18E-18	1.000
35290.000	2.90E-18	2.90E-18	1.001	35565.000	3.51E-18	3.42E-18	0.976	35840.000	4.19E-18	4.21E-18	1.004
35295.000	2.89E-18	2.90E-18	1.005	35570.000	3.53E-18	3.45E-18	0.976	35845.000	4.24E-18	4.24E-18	0.999
35300.000	2.88E-18	2.90E-18	1.008	35575.000	3.54E-18	3.47E-18	0.981	35850.000	4.24E-18	4.28E-18	1.010
35305.000	2.89E-18	2.88E-18	0.998	35580.000	3.54E-18	3.46E-18	0.978	35855.000	4.30E-18	4.29E-18	0.998
35310.000	2.87E-18	2.88E-18	1.004	35585.000	3.57E-18	3.47E-18	0.972	35860.000	4.29E-18	4.29E-18	1.002
35315.000	2.88E-18	2.88E-18	0.999	35590.000	3.54E-18	3.48E-18	0.984	35865.000	4.28E-18	4.27E-18	0.996
35320.000	2.89E-18	2.87E-18	0.992	35595.000	3.55E-18	3.49E-18	0.984	35870.000	4.31E-18	4.27E-18	0.990
35325.000	2.87E-18	2.86E-18	0.998	35600.000	3.57E-18	3.49E-18	0.978	35875.000	4.31E-18	4.31E-18	0.999
35330.000	2.85E-18	2.87E-18	1.008	35605.000	3.56E-18	3.50E-18	0.982	35880.000	4.34E-18	4.34E-18	0.999
35335.000	2.88E-18	2.86E-18	0.993	35610.000	3.58E-18	3.50E-18	0.978	35885.000	4.38E-18	4.35E-18	0.993
35340.000	2.87E-18	2.86E-18	0.995	35615.000	3.60E-18	3.50E-18	0.972	35890.000	4.36E-18	4.36E-18	0.999
35345.000	2.88E-18	2.86E-18	0.991	35620.000	3.58E-18	3.49E-18	0.975	35900.000	4.42E-18	4.38E-18	0.991
35350.000	2.91E-18	2.86E-18	0.982	35625.000	3.58E-18	3.49E-18	0.975	35905.000	4.40E-18	4.40E-18	0.999
35355.000	2.89E-18	2.88E-18	0.990	35630.000	3.57E-18	3.50E-18	0.980	35910.000	4.41E-18	4.42E-18	1.002
35360.000	2.92E-18	2.88E-18	0.985	35635.000	3.62E-18	3.52E-18	0.972	35915.000	4.42E-18	4.44E-18	1.004
35365.000	2.92E-18	2.89E-18	0.989	35640.000	3.59E-18	3.54E-18	0.985	35920.000	4.47E-18	4.44E-18	0.993
35370.000	2.93E-18	2.89E-18	0.987	35645.000	3.62E-18	3.53E-18	0.975	35925.000	4.42E-18	4.44E-18	1.004
35375.000	2.97E-18	2.90E-18	0.975	35650.000	3.59E-18	3.55E-18	0.989	35930.000	4.44E-18	4.43E-18	0.998
35380.000	3.00E-18	2.93E-18	0.986	35655.000	3.67E-18	3.58E-18	0.984	35935.000	4.48E-18	4.43E-18	0.987
35390.000	3.03E-18	2.96E-18	0.976	35660.000	3.61E-18	3.59E-18	0.990	35940.000	4.49E-18	4.43E-18	0.987
35395.000	3.00E-18	2.97E-18	0.991	35665.000	3.61E-18	3.61E-18	0.981	35945.000	4.49E-18	4.47E-18	0.996
35400.000	3.05E-18	2.99E-18	0.981	35670.000	3.68E-18	3.61E-18	0.971	35950.000	4.50E-18	4.47E-18	0.992
35405.000	3.06E-18	3.02E-18	0.987	35675.000	3.73E-18	3.62E-18	0.971	35955.000	4.49E-18	4.49E-18	0.999
35410.000	3.07E-18	3.03E-18	0.988	35680.000	3.75E-18	3.64E-18	0.970	35960.000	4.53E-18	4.55E-18	1.004
35415.000	3.09E-18	3.04E-18	0.985	35685.000	3.78E-18	3.66E-18	0.968	35965.000	4.55E-18	4.52E-18	0.993
35420.000	3.09E-18	3.05E-18	0.988	35690.000	3.83E-18	3.69E-18	0.963	35970.000	4.57E-18	4.51E-18	0.987
35425.000	3.10E-18	3.06E-18	0.986	35695.000	3.81E-18	3.74E-18	0.977	35975.000	4.55E-18	4.56E-18	1.002
35430.000	3.11E-18	3.06E-18	0.988	35700.000	3.88E-18	3.76E-18	0.969	35980.000	4.55E-18	4.62E-18	1.007
35435.000	3.07E-18	3.07E-18	0.987	35705.000	3.92E-18	3.82E-18	0.975	35985.000	4.58E-18	4.61E-18	1.008
35440.000	3.09E-18	3.07E-18	0.994	35710.000	3.91E-18	3.91E-18	1.001	35990.000	4.63E-18	4.65E-18	1.004
35445.000	3.11E-18	3.07E-18	0.989	35715.000	3.95E-18	3.95E-18	0.989	35995.000	4.67E-18	4.67E-18	1.001
35450.000	3.11E-18	3.06E-18	0.985	35720.000	3.96E-18	3.95E-18	0.996	36000.000	4.69E-18	4.69E-18	1.001
35455.000	3.10E-18	3.07E-18	0.990	35725.000	4.00E-18	3.96E-18	0.992	36005.000	4.73E-18	4.72E-18	0.998
35460.000	3.12E-18	3.07E-18	0.983	35730.000	4.00E-18	4.01E-18	1.002	36010.000	4.79E-18	4.75E-18	0.992
35465.000	3.13E-18	3.07E-18	0.981	35735.000	4.00E-18	3.98E-18	0.990	36015.000	4.80E-18	4.78E-18	0.997
35470.000	3.12E-18	3.07E-18	0.985	35740.000	4.04E-18	4.01E-18	0.992	36020.000	4.81E-18	4.80E-18	0.998

Comparison of ozone cross sections at 19° K: HCO and Bass data with RATIO = Bass / HCO (10)

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
36025.000	4.84E-18	4.79E-18	0.990	36100.000	5.54E-18	5.51E-18	0.994	36575.000	6.40E-18	6.43E-18	1.005
36030.000	4.86E-18	4.79E-18	0.986	36105.000	5.55E-18	5.54E-18	0.999	36580.000	6.48E-18	6.44E-18	0.994
36035.000	4.84E-18	4.84E-18	0.999	36110.000	5.59E-18	5.57E-18	0.996	36585.000	6.52E-18	6.48E-18	0.994
36040.000	4.88E-18	4.86E-18	0.996	36115.000	5.59E-18	5.61E-18	1.003	36590.000	6.47E-18	6.48E-18	1.002
36045.000	4.89E-18	4.87E-18	0.995	36120.000	5.61E-18	5.64E-18	1.005	36595.000	6.51E-18	6.50E-18	0.998
36050.000	4.91E-18	4.87E-18	0.991	36125.000	5.65E-18	5.6 E-18	0.997	36600.000	6.50E-18	6.51E-18	1.002
36055.000	4.91E-18	4.91E-18	1.000	36130.000	5.68E-18	5.66E-18	0.996	36605.000	6.54E-18	6.54E-18	0.999
36060.000	4.93E-18	4.91E-18	0.995	36135.000	5.67E-18	5.68E-18	1.002	36610.000	6.54E-18	6.57E-18	1.005
36065.000	4.95E-18	4.90E-18	0.989	36140.000	5.72E-18	5.7 E-18	0.998	36615.000	6.54E-18	6.54E-18	1.000
36070.000	4.95E-18	4.91E-18	0.993	36145.000	5.74E-18	5.76E-18	1.004	36620.000	6.58E-18	6.52E-18	0.991
36075.000	4.89E-18	4.90E-18	1.001	36150.000	5.73E-18	5.79E-18	1.010	36625.000	6.55E-18	6.53E-18	0.998
36080.000	4.93E-18	4.92E-18	0.998	36155.000	5.81E-18	5.78E-18	0.995	36630.000	6.52E-18	6.47E-18	0.992
36085.000	4.94E-18	4.93E-18	0.999	36160.000	5.83E-18	5.79E-18	0.994	36635.000	6.55E-18	6.53E-18	0.997
36090.000	4.94E-18	4.92E-18	0.996	36165.000	5.83E-18	5.85E-18	0.996	36640.000	6.53E-18	6.60E-18	1.011
36095.000	4.97E-18	4.94E-18	0.994	36170.000	5.87E-18	5.85E-18	0.996	36645.000	6.53E-18	6.60E-18	1.011
36100.000	5.00E-18	4.93E-18	0.986	36175.000	5.83E-18	5.83E-18	1.000	36650.000	6.57E-18	6.63E-18	1.003
36105.000	5.00E-18	4.95E-18	0.990	36180.000	5.84E-18	5.83E-18	0.994	36655.000	6.62E-18	6.64E-18	1.003
36110.000	5.01E-18	4.99E-18	0.996	36185.000	5.89E-18	5.8 E-18	0.986	36660.000	6.63E-18	6.64E-18	1.002
36115.000	5.03E-18	5.03E-18	1.000	36190.000	5.90E-18	5.89E-18	0.996	36665.000	6.66E-18	6.71E-18	1.008
36120.000	5.04E-18	5.02E-18	0.997	36195.000	5.84E-18	5.89E-18	1.006	36670.000	6.66E-18	6.71E-18	1.008
36125.000	5.04E-18	5.02E-18	0.997	36200.000	5.86E-18	5.87E-18	1.001	36675.000	6.73E-18	6.73E-18	1.000
36130.000	5.04E-18	5.03E-18	0.998	36205.000	5.88E-18	5.86E-18	0.998	36680.000	6.75E-18	6.74E-18	0.998
36135.000	5.01E-18	5.04E-18	1.007	36210.000	5.84E-18	5.83E-18	0.996	36685.000	6.74E-18	6.75E-18	1.002
36140.000	5.10E-18	5.02E-18	0.985	36215.000	5.82E-18	5.79E-18	0.995	36690.000	6.78E-18	6.77E-18	0.998
36145.000	5.09E-18	5.05E-18	0.992	36220.000	5.80E-18	5.79E-18	0.990	36695.000	6.80E-18	6.80E-18	1.005
36150.000	5.11E-18	5.08E-18	0.994	36225.000	5.80E-18	5.79E-18	0.991	36700.000	6.80E-18	6.83E-18	1.005
36155.000	5.13E-18	5.10E-18	0.994	36230.000	5.84E-18	5.82E-18	0.996	36705.000	6.77E-18	6.85E-18	1.012
36160.000	5.11E-18	5.12E-18	1.003	36235.000	5.82E-18	5.77E-18	0.997	36710.000	6.81E-18	6.84E-18	1.005
36165.000	5.15E-18	5.15E-18	1.001	36240.000	5.80E-18	5.78E-18	0.997	36715.000	6.82E-18	6.85E-18	1.005
36170.000	5.17E-18	5.18E-18	1.001	36245.000	5.82E-18	5.79E-18	0.995	36720.000	6.79E-18	6.87E-18	1.012
36175.000	5.23E-18	5.19E-18	0.993	36250.000	5.80E-18	5.74E-18	0.990	36725.000	6.87E-18	6.87E-18	1.000
36180.000	5.26E-18	5.21E-18	0.990	36255.000	5.81E-18	5.79E-18	0.991	36730.000	6.87E-18	6.93E-18	1.009
36185.000	5.27E-18	5.22E-18	0.982	36260.000	5.84E-18	5.83E-18	0.998	36735.000	6.95E-18	6.98E-18	1.004
36190.000	5.30E-18	5.22E-18	0.984	36265.000	5.86E-18	5.82E-18	0.993	36740.000	6.98E-18	7.01E-18	1.005
36195.000	5.31E-18	5.22E-18	0.982	36270.000	5.85E-18	5.80E-18	0.993	36745.000	7.00E-18	7.06E-18	1.007
36200.000	5.31E-18	5.24E-18	0.988	36275.000	5.91E-18	5.87E-18	0.993	36750.000	7.04E-18	7.09E-18	1.007
36205.000	5.32E-18	5.26E-18	0.990	36280.000	5.94E-18	5.92E-18	0.996	36755.000	7.06E-18	7.09E-18	1.005
36210.000	5.31E-18	5.27E-18	0.992	36285.000	5.96E-18	5.99E-18	1.006	36760.000	7.13E-18	7.08E-18	0.994
36215.000	5.27E-18	5.27E-18	0.993	36290.000	5.95E-18	5.98E-18	1.005	36765.000	7.17E-18	7.16E-18	0.999
36220.000	5.28E-18	5.30E-18	1.006	36295.000	6.01E-18	6.02E-18	1.001	36770.000	7.16E-18	7.16E-18	1.000
36225.000	5.28E-18	5.27E-18	0.998	36300.000	6.03E-18	6.04E-18	1.002	36775.000	7.17E-18	7.18E-18	0.999
36230.000	5.28E-18	5.28E-18	0.999	36305.000	6.06E-18	6.05E-18	0.999	36780.000	7.19E-18	7.18E-18	0.999
36235.000	5.29E-18	5.28E-18	0.998	36310.000	6.11E-18	6.11E-18	1.000	36785.000	7.18E-18	7.17E-18	0.999
36240.000	5.30E-18	5.26E-18	0.992	36315.000	6.13E-18	6.13E-18	0.999	36790.000	7.16E-18	7.16E-18	0.999
36245.000	5.31E-18	5.25E-18	0.989	36320.000	6.14E-18	6.14E-18	0.999	36795.000	7.19E-18	7.15E-18	0.994
36250.000	5.31E-18	5.28E-18	0.995	36325.000	6.17E-18	6.16E-18	0.998	36800.000	7.15E-18	7.16E-18	1.001
36255.000	5.36E-18	5.31E-18	0.990	36330.000	6.22E-18	6.20E-18	0.996	36805.000	7.18E-18	7.13E-18	0.993
36260.000	5.36E-18	5.31E-18	0.991	36335.000	6.22E-18	6.21E-18	1.002	36810.000	7.14E-18	7.11E-18	0.995
36265.000	5.37E-18	5.35E-18	0.996	36340.000	6.24E-18	6.28E-18	1.006	36815.000	7.19E-18	7.11E-18	0.989
36270.000	5.40E-18	5.42E-18	1.003	36345.000	6.30E-18	6.32E-18	1.004	36820.000	7.13E-18	7.17E-18	1.005
36275.000	5.42E-18	5.45E-18	1.005	36350.000	6.31E-18	6.34E-18	1.004	36825.000	7.12E-18	7.14E-18	1.003
36280.000	5.48E-18	5.44E-18	0.993	36355.000	6.33E-18	6.31E-18	0.996	36830.000	7.13E-18	7.17E-18	1.005
36285.000	5.44E-18	5.47E-18	1.006	36360.000	6.37E-18	6.35E-18	0.996	36835.000	7.17E-18	7.19E-18	1.003
36290.000	5.51E-18	5.46E-18	0.991	36365.000	6.38E-18	6.43E-18	1.012	36840.000	7.18E-18	7.17E-18	0.998
36295.000	5.51E-18	5.47E-18	0.993	36370.000	6.44E-18	6.45E-18	1.002	36845.000	7.14E-18	7.20E-18	1.009

(11)

Comparison of ozone cross sections at 195 K: HCO and Bass data with RATIO = Bass / HCO

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
36850.000	7.23E-18	7.23E-18	1.000	37125.000	7.99E-18	7.91E-18	0.990	37400.000	8.95E-18	8.72E-18	0.974
36855.000	7.17E-18	7.23E-18	1.009	37130.000	7.96E-18	7.91E-18	0.994	37405.000	8.82E-18	8.67E-18	0.984
36860.000	7.20E-18	7.21E-18	1.001	37135.000	7.95E-18	7.91E-18	0.995	37410.000	8.78E-18	8.64E-18	0.980
36865.000	7.21E-18	7.23E-18	1.003	37140.000	7.96E-18	7.91E-18	0.994	37415.000	8.78E-18	8.60E-18	0.984
36870.000	7.25E-18	7.25E-18	1.001	37145.000	7.95E-18	7.89E-18	0.993	37420.000	8.74E-18	8.56E-18	0.979
36875.000	7.30E-18	7.26E-18	0.994	37150.000	7.96E-18	7.87E-18	0.989	37425.000	8.79E-18	8.57E-18	0.975
36880.000	7.27E-18	7.21E-18	0.992	37155.000	7.98E-18	7.84E-18	0.983	37430.000	8.79E-18	8.58E-18	0.976
36885.000	7.26E-18	7.25E-18	0.998	37160.000	7.93E-18	7.89E-18	0.995	37435.000	8.78E-18	8.58E-18	0.977
36890.000	7.28E-18	7.29E-18	1.001	37165.000	8.04E-18	7.92E-18	0.985	37440.000	8.72E-18	8.57E-18	0.983
36895.000	7.32E-18	7.28E-18	0.995	37170.000	7.98E-18	7.92E-18	0.993	37445.000	8.75E-18	8.60E-18	0.982
36900.000	7.30E-18	7.25E-18	0.993	37175.000	8.05E-18	7.94E-18	0.986	37450.000	8.81E-18	8.62E-18	0.979
36905.000	7.33E-18	7.29E-18	0.994	37180.000	8.04E-18	7.98E-18	0.993	37455.000	8.84E-18	8.65E-18	0.979
36910.000	7.35E-18	7.35E-18	1.000	37185.000	8.04E-18	8.02E-18	0.998	37460.000	8.88E-18	8.69E-18	0.979
36915.000	7.33E-18	7.39E-18	1.008	37190.000	8.10E-18	8.05E-18	0.994	37465.000	8.92E-18	8.75E-18	0.981
36920.000	7.31E-18	7.35E-18	1.005	37195.000	8.11E-18	8.08E-18	0.996	37470.000	9.00E-18	8.81E-18	0.985
36925.000	7.35E-18	7.33E-18	0.997	37200.000	8.16E-18	8.08E-18	0.990	37475.000	9.00E-18	8.85E-18	0.983
36930.000	7.34E-18	7.33E-18	0.998	37205.000	8.15E-18	8.07E-18	0.991	37480.000	9.06E-18	8.88E-18	0.980
36935.000	7.37E-18	7.36E-18	0.998	37210.000	8.19E-18	8.12E-18	0.991	37485.000	9.07E-18	8.91E-18	0.982
36940.000	7.42E-18	7.38E-18	0.995	37215.000	8.16E-18	8.14E-18	0.995	37490.000	9.11E-18	8.95E-18	0.982
36945.000	7.40E-18	7.39E-18	0.999	37220.000	8.19E-18	8.14E-18	0.994	37495.000	9.18E-18	9.05E-18	0.986
36950.000	7.50E-18	7.41E-18	0.988	37225.000	8.20E-18	8.15E-18	0.994	37500.000	9.22E-18	9.06E-18	0.983
36955.000	7.48E-18	7.45E-18	0.995	37230.000	8.25E-18	8.14E-18	0.987	37505.000	9.28E-18	9.04E-18	0.974
36960.000	7.59E-18	7.50E-18	0.988	37235.000	8.28E-18	8.13E-18	0.982	37510.000	9.28E-18	9.06E-18	0.977
36965.000	7.54E-18	7.58E-18	1.005	37240.000	8.30E-18	8.17E-18	0.985	37515.000	9.22E-18	9.16E-18	0.994
36970.000	7.59E-18	7.55E-18	0.995	37245.000	8.33E-18	8.23E-18	0.988	37520.000	9.26E-18	9.19E-18	0.992
36975.000	7.62E-18	7.62E-18	1.002	37250.000	8.33E-18	8.26E-18	0.983	37525.000	9.29E-18	9.11E-18	0.980
36980.000	7.67E-18	7.69E-18	1.002	37255.000	8.41E-18	8.27E-18	0.989	37530.000	9.28E-18	9.13E-18	0.983
36985.000	7.65E-18	7.66E-18	1.001	37260.000	8.50E-18	8.30E-18	0.976	37535.000	9.32E-18	9.12E-18	0.978
36990.000	7.72E-18	7.68E-18	0.999	37265.000	8.50E-18	8.35E-18	0.982	37540.000	9.33E-18	9.12E-18	0.978
36995.000	7.74E-18	7.70E-18	0.995	37270.000	8.54E-18	8.40E-18	0.983	37545.000	9.38E-18	9.16E-18	0.976
37000.000	7.80E-18	7.75E-18	0.994	37275.000	8.53E-18	8.42E-18	0.987	37550.000	9.37E-18	9.16E-18	0.977
37005.000	7.85E-18	7.80E-18	0.994	37280.000	8.60E-18	8.44E-18	0.981	37555.000	9.40E-18	9.16E-18	0.974
37010.000	7.81E-18	7.85E-18	1.005	37285.000	8.71E-18	8.50E-18	0.976	37560.000	9.30E-18	9.16E-18	0.985
37015.000	7.90E-18	7.89E-18	0.999	37290.000	8.68E-18	8.58E-18	0.989	37565.000	9.33E-18	9.18E-18	0.984
37020.000	7.95E-18	7.93E-18	0.997	37295.000	8.72E-18	8.60E-18	0.987	37570.000	9.38E-18	9.24E-18	0.985
37025.000	7.98E-18	7.99E-18	1.001	37300.000	8.78E-18	8.62E-18	0.987	37575.000	9.43E-18	9.30E-18	0.987
37030.000	8.00E-18	8.04E-18	1.005	37305.000	8.87E-18	8.64E-18	0.984	37580.000	9.52E-18	9.26E-18	0.973
37035.000	8.03E-18	8.04E-18	1.001	37310.000	8.89E-18	8.66E-18	0.976	37585.000	9.55E-18	9.28E-18	0.971
37040.000	8.02E-18	8.05E-18	1.004	37315.000	8.92E-18	8.66E-18	0.984	37590.000	9.57E-18	9.31E-18	0.973
37045.000	8.11E-18	8.10E-18	0.999	37320.000	8.92E-18	8.70E-18	0.976	37595.000	9.60E-18	9.34E-18	0.973
37050.000	8.15E-18	8.16E-18	1.002	37325.000	8.89E-18	8.74E-18	0.983	37600.000	9.65E-18	9.35E-18	0.968
37055.000	8.19E-18	8.20E-18	1.001	37330.000	8.92E-18	8.78E-18	0.988	37605.000	9.69E-18	9.39E-18	0.970
37060.000	8.21E-18	8.20E-18	0.999	37335.000	9.01E-18	8.85E-18	0.983	37610.000	9.74E-18	9.48E-18	0.974
37065.000	8.23E-18	8.23E-18	1.000	37340.000	9.07E-18	8.86E-18	0.983	37615.000	9.67E-18	9.48E-18	0.981
37070.000	8.28E-18	8.19E-18	0.999	37345.000	9.09E-18	8.85E-18	0.973	37620.000	9.69E-18	9.48E-18	0.978
37075.000	8.28E-18	8.16E-18	0.991	37350.000	9.03E-18	8.92E-18	0.988	37625.000	9.73E-18	9.48E-18	0.975
37080.000	8.20E-18	8.11E-18	0.979	37355.000	9.07E-18	8.92E-18	0.988	37630.000	9.73E-18	9.50E-18	0.976
37085.000	8.28E-18	8.11E-18	0.979	37360.000	9.07E-18	8.93E-18	0.984	37635.000	9.75E-18	9.51E-18	0.974
37090.000	8.16E-18	8.06E-18	0.988	37365.000	9.09E-18	8.90E-18	0.988	37640.000	9.76E-18	9.51E-18	0.976
37095.000	8.09E-18	8.05E-18	0.995	37370.000	9.09E-18	8.88E-18	0.977	37645.000	9.69E-18	9.47E-18	0.978
37100.000	8.12E-18	8.04E-18	0.987	37375.000	9.06E-18	8.88E-18	0.980	37650.000	9.75E-18	9.52E-18	0.976
37105.000	8.06E-18	7.98E-18	0.990	37380.000	9.02E-18	8.88E-18	0.984	37655.000	9.72E-18	9.54E-18	0.981
37110.000	8.06E-18	7.94E-18	0.984	37385.000	9.04E-18	8.85E-18	0.979	37660.000	9.75E-18	9.54E-18	0.978
37115.000	8.06E-18	7.94E-18	0.984	37390.000	8.96E-18	8.85E-18	0.980	37665.000	9.70E-18	9.52E-18	0.982
37120.000	7.96E-18	7.91E-18	0.993	37395.000	8.96E-18	8.78E-18	0.980	37670.000	9.70E-18	9.52E-18	0.981

(12)

Comparison of ozone cross sections at 195 K: HCO and Bass data with RATIO = Bass / HCO

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
37675.000	9.71E-18	9.51E-18	0.980	37950.000	9.79E-18	9.70E-18	0.991	38225.000	1.04E-17	1.03E-17	0.992
37680.000	9.74E-18	9.49E-18	0.974	37955.000	9.89E-18	9.70E-18	0.981	38230.000	1.04E-17	1.03E-17	0.992
37685.000	9.67E-18	9.44E-18	0.976	37960.000	9.84E-18	9.71E-18	0.989	38235.000	1.04E-17	1.04E-17	0.999
37690.000	9.64E-18	9.41E-18	0.977	37965.000	9.84E-18	9.75E-18	0.990	38240.000	1.04E-17	1.04E-17	0.997
37695.000	9.63E-18	9.42E-18	0.978	37970.000	9.94E-18	9.74E-18	0.980	38245.000	1.05E-17	1.04E-17	0.986
37700.000	9.66E-18	9.39E-18	0.972	37975.000	9.87E-18	9.72E-18	0.985	38250.000	1.04E-17	1.04E-17	0.997
37705.000	9.55E-18	9.39E-18	0.983	37980.000	9.92E-18	9.73E-18	0.994	38255.000	1.05E-17	1.04E-17	0.992
37710.000	9.58E-18	9.38E-18	0.980	37985.000	9.82E-18	9.76E-18	0.994	38260.000	1.05E-17	1.04E-17	0.994
37715.000	9.54E-18	9.31E-18	0.978	37990.000	9.92E-18	9.79E-18	0.987	38265.000	1.05E-17	1.05E-17	0.996
37720.000	9.52E-18	9.32E-18	0.977	37995.000	9.98E-18	9.79E-18	0.980	38270.000	1.06E-17	1.05E-17	0.990
37725.000	9.52E-18	9.33E-18	0.980	38000.000	9.94E-18	9.79E-18	0.987	38275.000	1.07E-17	1.05E-17	0.985
37730.000	9.55E-18	9.33E-18	0.977	38005.000	9.85E-18	9.81E-18	0.996	38280.000	1.07E-17	1.06E-17	0.989
37735.000	9.61E-18	9.41E-18	0.979	38010.000	1.00E-17	9.86E-18	0.986	38285.000	1.06E-17	1.06E-17	0.998
37740.000	9.65E-18	9.44E-18	0.978	38015.000	1.01E-17	9.89E-18	0.979	38290.000	1.08E-17	1.06E-17	0.983
37745.000	9.68E-18	9.43E-18	0.975	38020.000	1.01E-17	9.93E-18	0.983	38295.000	1.08E-17	1.07E-17	0.990
37750.000	9.75E-18	9.54E-18	0.979	38025.000	1.02E-17	9.96E-18	0.977	38300.000	1.08E-17	1.08E-17	0.998
37755.000	9.86E-18	9.58E-18	0.972	38030.000	1.02E-17	1.00E-17	0.983	38305.000	1.08E-17	1.08E-17	1.001
37760.000	9.94E-18	9.60E-18	0.966	38035.000	1.02E-17	1.01E-17	0.987	38310.000	1.09E-17	1.08E-17	0.994
37765.000	9.94E-18	9.66E-18	0.972	38040.000	1.03E-17	1.01E-17	0.992	38315.000	1.09E-17	1.09E-17	1.000
37770.000	1.00E-17	9.71E-18	0.971	38045.000	1.03E-17	1.02E-17	0.989	38320.000	1.10E-17	1.10E-17	0.997
37775.000	1.01E-17	9.75E-18	0.965	38050.000	1.04E-17	1.02E-17	0.984	38325.000	1.11E-17	1.10E-17	0.993
37780.000	1.01E-17	9.76E-18	0.966	38055.000	1.04E-17	1.03E-17	0.987	38330.000	1.11E-17	1.10E-17	0.995
37785.000	1.02E-17	9.83E-18	0.963	38060.000	1.05E-17	1.03E-17	0.980	38335.000	1.11E-17	1.11E-17	1.000
37790.000	1.01E-17	9.89E-18	0.979	38065.000	1.06E-17	1.04E-17	0.977	38340.000	1.12E-17	1.11E-17	0.993
37795.000	1.02E-17	9.94E-18	0.974	38070.000	1.06E-17	1.04E-17	0.982	38345.000	1.12E-17	1.11E-17	0.992
37800.000	1.02E-17	9.94E-18	0.975	38075.000	1.06E-17	1.04E-17	0.986	38350.000	1.12E-17	1.11E-17	0.995
37805.000	1.02E-17	9.96E-18	0.977	38080.000	1.06E-17	1.05E-17	0.995	38355.000	1.13E-17	1.11E-17	0.986
37810.000	1.03E-17	9.99E-18	0.970	38085.000	1.06E-17	1.06E-17	0.997	38360.000	1.12E-17	1.11E-17	0.992
37815.000	1.03E-17	1.00E-17	0.973	38090.000	1.07E-17	1.05E-17	0.984	38365.000	1.10E-17	1.11E-17	1.013
37820.000	1.02E-17	1.00E-17	0.981	38095.000	1.07E-17	1.05E-17	0.984	38370.000	1.11E-17	1.11E-17	1.003
37825.000	1.03E-17	1.00E-17	0.971	38100.000	1.07E-17	1.06E-17	0.989	38375.000	1.12E-17	1.11E-17	0.991
37830.000	1.03E-17	1.00E-17	0.973	38105.000	1.07E-17	1.06E-17	0.995	38380.000	1.12E-17	1.11E-17	0.994
37835.000	1.03E-17	1.00E-17	0.972	38110.000	1.07E-17	1.06E-17	0.991	38385.000	1.11E-17	1.11E-17	1.002
37840.000	1.03E-17	1.00E-17	0.972	38115.000	1.07E-17	1.06E-17	0.991	38390.000	1.10E-17	1.11E-17	1.009
37845.000	1.03E-17	1.00E-17	0.975	38120.000	1.07E-17	1.06E-17	0.992	38395.000	1.11E-17	1.11E-17	0.998
37850.000	1.03E-17	1.00E-17	0.975	38125.000	1.07E-17	1.06E-17	0.990	38400.000	1.10E-17	1.10E-17	0.993
37855.000	1.03E-17	1.00E-17	0.974	38130.000	1.06E-17	1.05E-17	0.994	38405.000	1.10E-17	1.10E-17	0.996
37860.000	1.02E-17	1.00E-17	0.981	38135.000	1.07E-17	1.05E-17	0.983	38410.000	1.10E-17	1.10E-17	1.000
37865.000	1.02E-17	1.00E-17	0.980	38140.000	1.07E-17	1.06E-17	0.988	38415.000	1.09E-17	1.09E-17	1.004
37870.000	1.02E-17	9.97E-18	0.977	38145.000	1.06E-17	1.05E-17	0.995	38420.000	1.09E-17	1.09E-17	0.996
37875.000	1.02E-17	9.94E-18	0.974	38150.000	1.06E-17	1.05E-17	0.992	38425.000	1.09E-17	1.08E-17	0.994
37880.000	1.01E-17	9.92E-18	0.982	38155.000	1.06E-17	1.05E-17	0.989	38430.000	1.08E-17	1.08E-17	1.001
37885.000	1.00E-17	9.90E-18	0.980	38160.000	1.04E-17	1.05E-17	1.009	38435.000	1.07E-17	1.07E-17	1.008
37890.000	1.00E-17	9.88E-18	0.988	38165.000	1.04E-17	1.05E-17	1.006	38440.000	1.07E-17	1.07E-17	1.002
37895.000	9.96E-18	9.87E-18	0.991	38170.000	1.04E-17	1.04E-17	1.001	38445.000	1.07E-17	1.07E-17	0.997
37900.000	1.01E-17	9.85E-18	0.976	38175.000	1.05E-17	1.04E-17	0.993	38450.000	1.07E-17	1.06E-17	0.994
37905.000	9.99E-18	9.82E-18	0.983	38180.000	1.04E-17	1.04E-17	0.991	38455.000	1.07E-17	1.06E-17	0.993
37910.000	1.00E-17	9.79E-18	0.979	38185.000	1.04E-17	1.04E-17	0.999	38460.000	1.06E-17	1.06E-17	1.002
37915.000	1.00E-17	9.84E-18	0.984	38190.000	1.05E-17	1.05E-17	0.996	38465.000	1.06E-17	1.06E-17	1.001
37920.000	9.96E-18	9.80E-18	0.984	38195.000	1.05E-17	1.05E-17	0.996	38470.000	1.05E-17	1.06E-17	1.011
37925.000	9.89E-18	9.74E-18	0.984	38200.000	1.05E-17	1.04E-17	0.997	38475.000	1.05E-17	1.06E-17	1.010
37930.000	9.91E-18	9.70E-18	0.978	38205.000	1.04E-17	1.04E-17	0.997	38480.000	1.05E-17	1.06E-17	1.009
37935.000	9.86E-18	9.66E-18	0.980	38210.000	1.04E-17	1.04E-17	0.999	38485.000	1.05E-17	1.06E-17	1.008
37940.000	9.90E-18	9.66E-18	0.976	38215.000	1.03E-17	1.04E-17	1.011	38490.000	1.05E-17	1.05E-17	1.004
37945.000	9.80E-18	9.69E-18	0.989	38220.000	1.04E-17	1.04E-17	0.998	38495.000	1.05E-17	1.06E-17	1.005

Comparison of ozone cross sections at 195 K: HCO and Bass data with KATIO = Bass / HCO (13)

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
38500.000	1.05E-17	1.06E-17	1.012	38775.000	1.11E-17	1.11E-17	1.004	39050.000	1.14E-17	1.14E-17	1.001
38505.000	1.05E-17	1.06E-17	1.012	38780.000	1.11E-17	1.12E-17	1.005	39055.000	1.15E-17	1.15E-17	0.996
38510.000	1.06E-17	1.06E-17	1.003	38785.000	1.11E-17	1.12E-17	1.007	39060.000	1.15E-17	1.15E-17	0.998
38515.000	1.06E-17	1.06E-17	1.003	38790.000	1.11E-17	1.12E-17	1.006	39065.000	1.14E-17	1.15E-17	1.008
38520.000	1.06E-17	1.07E-17	1.007	38795.000	1.10E-17	1.12E-17	1.014	39070.000	1.16E-17	1.15E-17	0.991
38525.000	1.06E-17	1.07E-17	1.010	38800.000	1.11E-17	1.12E-17	1.005	39075.000	1.15E-17	1.15E-17	1.001
38530.000	1.07E-17	1.07E-17	1.002	38805.000	1.10E-17	1.12E-17	1.017	39080.000	1.15E-17	1.15E-17	1.004
38535.000	1.07E-17	1.08E-17	1.006	38810.000	1.10E-17	1.12E-17	1.017	39085.000	1.15E-17	1.16E-17	1.005
38540.000	1.08E-17	1.08E-17	1.002	38815.000	1.11E-17	1.12E-17	1.008	39090.000	1.16E-17	1.16E-17	0.997
38545.000	1.07E-17	1.09E-17	1.019	38820.000	1.11E-17	1.12E-17	1.009	39095.000	1.17E-17	1.16E-17	0.990
38550.000	1.09E-17	1.10E-17	1.006	38825.000	1.11E-17	1.12E-17	1.010	39100.000	1.16E-17	1.16E-17	0.999
38555.000	1.10E-17	1.10E-17	1.001	38830.000	1.12E-17	1.12E-17	1.003	39105.000	1.17E-17	1.16E-17	0.993
38560.000	1.10E-17	1.10E-17	1.003	38835.000	1.11E-17	1.13E-17	1.014	39110.000	1.17E-17	1.17E-17	0.996
38565.000	1.11E-17	1.11E-17	0.999	38840.000	1.12E-17	1.13E-17	1.007	39115.000	1.17E-17	1.17E-17	0.997
38570.000	1.11E-17	1.11E-17	1.011	38845.000	1.12E-17	1.13E-17	1.008	39120.000	1.18E-17	1.17E-17	0.991
38575.000	1.11E-17	1.12E-17	1.005	38850.000	1.12E-17	1.13E-17	1.010	39125.000	1.17E-17	1.17E-17	1.003
38580.000	1.12E-17	1.13E-17	1.006	38855.000	1.12E-17	1.13E-17	1.011	39130.000	1.18E-17	1.18E-17	0.997
38585.000	1.13E-17	1.13E-17	1.002	38860.000	1.13E-17	1.13E-17	1.004	39135.000	1.18E-17	1.18E-17	0.998
38590.000	1.13E-17	1.14E-17	1.006	38865.000	1.12E-17	1.14E-17	1.015	39140.000	1.18E-17	1.18E-17	0.996
38595.000	1.13E-17	1.14E-17	1.008	38870.000	1.12E-17	1.14E-17	1.015	39145.000	1.18E-17	1.18E-17	0.997
38600.000	1.14E-17	1.14E-17	1.002	38875.000	1.12E-17	1.14E-17	1.014	39150.000	1.18E-17	1.18E-17	0.992
38605.000	1.14E-17	1.15E-17	1.005	38880.000	1.13E-17	1.14E-17	1.005	39155.000	1.19E-17	1.18E-17	0.992
38610.000	1.15E-17	1.15E-17	1.001	38885.000	1.12E-17	1.14E-17	1.014	39160.000	1.19E-17	1.18E-17	0.992
38615.000	1.16E-17	1.15E-17	0.995	38890.000	1.12E-17	1.14E-17	1.015	39165.000	1.18E-17	1.18E-17	0.999
38620.000	1.15E-17	1.16E-17	1.007	38895.000	1.12E-17	1.13E-17	1.013	39170.000	1.18E-17	1.18E-17	1.000
38625.000	1.16E-17	1.16E-17	1.000	38900.000	1.12E-17	1.13E-17	1.010	39175.000	1.18E-17	1.17E-17	0.991
38630.000	1.16E-17	1.16E-17	1.002	38905.000	1.12E-17	1.13E-17	1.013	39180.000	1.18E-17	1.17E-17	0.993
38635.000	1.16E-17	1.16E-17	1.003	38910.000	1.12E-17	1.13E-17	1.010	39185.000	1.18E-17	1.17E-17	0.993
38640.000	1.16E-17	1.16E-17	1.003	38915.000	1.11E-17	1.13E-17	1.017	39190.000	1.16E-17	1.17E-17	1.011
38645.000	1.17E-17	1.17E-17	0.996	38920.000	1.12E-17	1.13E-17	1.006	39195.000	1.16E-17	1.17E-17	1.009
38650.000	1.17E-17	1.17E-17	0.997	38925.000	1.10E-17	1.12E-17	1.019	39200.000	1.16E-17	1.16E-17	1.002
38655.000	1.16E-17	1.16E-17	1.003	38930.000	1.11E-17	1.12E-17	1.007	39205.000	1.15E-17	1.16E-17	1.008
38660.000	1.16E-17	1.16E-17	1.003	38935.000	1.11E-17	1.12E-17	1.007	39210.000	1.15E-17	1.16E-17	1.008
38665.000	1.16E-17	1.16E-17	1.003	38940.000	1.10E-17	1.12E-17	1.017	39215.000	1.15E-17	1.15E-17	1.004
38670.000	1.16E-17	1.15E-17	0.994	38945.000	1.10E-17	1.12E-17	1.018	39220.000	1.15E-17	1.15E-17	1.000
38675.000	1.15E-17	1.15E-17	1.002	38950.000	1.10E-17	1.12E-17	1.018	39225.000	1.14E-17	1.14E-17	1.004
38680.000	1.15E-17	1.15E-17	1.003	38955.000	1.10E-17	1.12E-17	1.017	39230.000	1.13E-17	1.14E-17	1.009
38685.000	1.15E-17	1.15E-17	1.002	38960.000	1.10E-17	1.12E-17	1.014	39235.000	1.14E-17	1.14E-17	0.998
38690.000	1.15E-17	1.15E-17	0.999	38965.000	1.11E-17	1.11E-17	1.002	39240.000	1.13E-17	1.14E-17	1.005
38695.000	1.14E-17	1.14E-17	1.003	38970.000	1.10E-17	1.11E-17	1.010	39245.000	1.12E-17	1.13E-17	1.013
38700.000	1.14E-17	1.14E-17	0.998	38975.000	1.10E-17	1.11E-17	1.010	39250.000	1.12E-17	1.13E-17	1.012
38705.000	1.13E-17	1.13E-17	1.004	38980.000	1.11E-17	1.11E-17	1.001	39255.000	1.11E-17	1.13E-17	1.019
38710.000	1.13E-17	1.13E-17	1.002	38985.000	1.11E-17	1.12E-17	1.006	39260.000	1.12E-17	1.13E-17	1.008
38715.000	1.12E-17	1.13E-17	1.012	38990.000	1.11E-17	1.12E-17	1.010	39265.000	1.12E-17	1.13E-17	1.007
38720.000	1.11E-17	1.13E-17	1.017	38995.000	1.12E-17	1.12E-17	0.999	39270.000	1.11E-17	1.13E-17	1.017
38725.000	1.11E-17	1.12E-17	1.012	39000.000	1.12E-17	1.12E-17	1.004	39275.000	1.12E-17	1.13E-17	1.007
38730.000	1.12E-17	1.12E-17	0.999	39005.000	1.12E-17	1.13E-17	1.008	39280.000	1.11E-17	1.13E-17	1.015
38735.000	1.11E-17	1.12E-17	1.006	39010.000	1.12E-17	1.13E-17	1.009	39285.000	1.12E-17	1.13E-17	1.007
38740.000	1.10E-17	1.12E-17	1.015	39015.000	1.13E-17	1.13E-17	1.001	39290.000	1.12E-17	1.13E-17	1.008
38745.000	1.11E-17	1.12E-17	1.005	39020.000	1.14E-17	1.13E-17	1.004	39295.000	1.12E-17	1.13E-17	1.008
38750.000	1.10E-17	1.11E-17	1.012	39025.000	1.13E-17	1.14E-17	1.006	39300.000	1.12E-17	1.13E-17	1.012
38755.000	1.10E-17	1.11E-17	1.011	39030.000	1.13E-17	1.14E-17	1.008	39305.000	1.14E-17	1.14E-17	0.999
38760.000	1.10E-17	1.11E-17	1.014	39035.000	1.13E-17	1.14E-17	1.009	39310.000	1.14E-17	1.15E-17	1.005
38765.000	1.10E-17	1.12E-17	1.014	39040.000	1.14E-17	1.14E-17	1.010	39315.000	1.13E-17	1.15E-17	1.014
38770.000	1.11E-17	1.12E-17	1.005	39045.000	1.14E-17	1.14E-17	1.001	39320.000	1.13E-17	1.14E-17	1.013

Comparison of ozone cross sections at 195 K: HCO and Bass data with $\text{RATIO} = \text{Bass} / \text{HCO}$ (14)

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
39325.000	1.14E-17	1.14E-17	1.004	39600.000	1.10E-17	1.13E-17	1.030	39875.000	1.09E-17	1.11E-17	1.014
39330.000	1.14E-17	1.15E-17	1.006	39605.000	1.10E-17	1.13E-17	1.031	39880.000	1.08E-17	1.10E-17	1.020
39335.000	1.14E-17	1.15E-17	1.009	39610.000	1.12E-17	1.13E-17	1.013	39885.000	1.08E-17	1.10E-17	1.019
39340.000	1.14E-17	1.16E-17	1.014	39615.000	1.12E-17	1.14E-17	1.014	39890.000	1.08E-17	1.10E-17	1.020
39345.000	1.14E-17	1.16E-17	1.014	39620.000	1.12E-17	1.14E-17	1.016	39895.000	1.08E-17	1.10E-17	1.021
39350.000	1.14E-17	1.15E-17	1.013	39625.000	1.13E-17	1.14E-17	1.007	39900.000	1.09E-17	1.10E-17	1.011
39355.000	1.15E-17	1.16E-17	1.007	39630.000	1.13E-17	1.14E-17	1.007	39905.000	1.08E-17	1.10E-17	1.018
39360.000	1.15E-17	1.16E-17	1.006	39635.000	1.12E-17	1.14E-17	1.018	39910.000	1.09E-17	1.10E-17	1.010
39365.000	1.14E-17	1.16E-17	1.014	39640.000	1.12E-17	1.14E-17	1.019	39915.000	1.09E-17	1.10E-17	1.013
39370.000	1.15E-17	1.16E-17	1.005	39645.000	1.13E-17	1.14E-17	1.011	39920.000	1.09E-17	1.10E-17	1.013
39375.000	1.15E-17	1.16E-17	1.007	39650.000	1.14E-17	1.14E-17	1.004	39925.000	1.09E-17	1.10E-17	1.014
39380.000	1.15E-17	1.16E-17	1.009	39655.000	1.14E-17	1.15E-17	1.005	39930.000	1.09E-17	1.11E-17	1.016
39385.000	1.15E-17	1.16E-17	1.005	39660.000	1.13E-17	1.14E-17	1.013	39935.000	1.08E-17	1.11E-17	1.027
39390.000	1.15E-17	1.16E-17	1.004	39665.000	1.14E-17	1.15E-17	1.006	39940.000	1.09E-17	1.11E-17	1.019
39395.000	1.15E-17	1.16E-17	1.007	39670.000	1.14E-17	1.15E-17	1.009	39945.000	1.10E-17	1.11E-17	1.009
39400.000	1.15E-17	1.16E-17	1.005	39675.000	1.15E-17	1.15E-17	1.002	39950.000	1.10E-17	1.11E-17	1.011
39405.000	1.15E-17	1.15E-17	1.003	39680.000	1.16E-17	1.15E-17	0.995	39955.000	1.10E-17	1.11E-17	1.014
39410.000	1.12E-17	1.15E-17	1.030	39685.000	1.15E-17	1.16E-17	1.005	39960.000	1.11E-17	1.11E-17	1.004
39415.000	1.13E-17	1.15E-17	1.021	39690.000	1.15E-17	1.16E-17	1.009	39965.000	1.10E-17	1.12E-17	1.013
39420.000	1.14E-17	1.15E-17	1.013	39695.000	1.14E-17	1.16E-17	1.020	39970.000	1.10E-17	1.12E-17	1.014
39425.000	1.15E-17	1.15E-17	1.004	39700.000	1.15E-17	1.16E-17	1.011	39975.000	1.10E-17	1.11E-17	1.013
39430.000	1.14E-17	1.16E-17	1.014	39705.000	1.15E-17	1.16E-17	1.011	39980.000	1.11E-17	1.12E-17	1.006
39435.000	1.13E-17	1.16E-17	1.022	39710.000	1.16E-17	1.16E-17	1.002	39985.000	1.11E-17	1.12E-17	1.011
39440.000	1.14E-17	1.15E-17	1.010	39715.000	1.16E-17	1.17E-17	1.006	39990.000	1.11E-17	1.12E-17	1.012
39445.000	1.14E-17	1.15E-17	1.009	39720.000	1.16E-17	1.17E-17	1.005	39995.000	1.10E-17	1.12E-17	1.020
39450.000	1.13E-17	1.15E-17	1.017	39725.000	1.15E-17	1.16E-17	1.012	40000.000	1.11E-17	1.12E-17	1.010
39455.000	1.13E-17	1.15E-17	1.014	39730.000	1.15E-17	1.16E-17	1.009	40005.000	1.09E-17	1.12E-17	1.038
39460.000	1.13E-17	1.14E-17	1.012	39735.000	1.14E-17	1.16E-17	1.017	40010.000	1.10E-17	1.12E-17	1.019
39465.000	1.13E-17	1.14E-17	1.013	39740.000	1.15E-17	1.16E-17	1.007	40015.000	1.11E-17	1.12E-17	1.010
39470.000	1.13E-17	1.14E-17	1.012	39745.000	1.13E-17	1.16E-17	1.023	40020.000	1.10E-17	1.12E-17	1.019
39475.000	1.12E-17	1.14E-17	1.020	39750.000	1.14E-17	1.15E-17	1.013	40025.000	1.10E-17	1.12E-17	1.018
39480.000	1.12E-17	1.14E-17	1.018	39755.000	1.14E-17	1.15E-17	1.010	40030.000	1.11E-17	1.12E-17	1.008
39485.000	1.12E-17	1.14E-17	1.017	39760.000	1.14E-17	1.15E-17	1.008	40035.000	1.10E-17	1.12E-17	1.015
39490.000	1.12E-17	1.14E-17	1.017	39765.000	1.12E-17	1.15E-17	1.023	40040.000	1.10E-17	1.11E-17	1.013
39495.000	1.13E-17	1.13E-17	1.004	39770.000	1.12E-17	1.14E-17	1.016	40045.000	1.11E-17	1.11E-17	1.002
39500.000	1.12E-17	1.14E-17	1.013	39775.000	1.12E-17	1.13E-17	1.012	40050.000	1.10E-17	1.11E-17	1.009
39505.000	1.12E-17	1.14E-17	1.016	39780.000	1.11E-17	1.13E-17	1.018	40055.000	1.09E-17	1.11E-17	1.018
39510.000	1.11E-17	1.14E-17	1.027	39785.000	1.11E-17	1.13E-17	1.015	40060.000	1.09E-17	1.11E-17	1.019
39515.000	1.12E-17	1.14E-17	1.018	39790.000	1.11E-17	1.12E-17	1.013	40065.000	1.08E-17	1.11E-17	1.030
39520.000	1.11E-17	1.14E-17	1.026	39795.000	1.10E-17	1.12E-17	1.020	40070.000	1.08E-17	1.11E-17	1.027
39525.000	1.11E-17	1.13E-17	1.022	39800.000	1.10E-17	1.12E-17	1.017	40075.000	1.09E-17	1.11E-17	1.016
39530.000	1.11E-17	1.13E-17	1.018	39805.000	1.10E-17	1.12E-17	1.014	40080.000	1.08E-17	1.11E-17	1.027
39535.000	1.11E-17	1.13E-17	1.015	39810.000	1.10E-17	1.11E-17	1.013	40085.000	1.08E-17	1.11E-17	1.025
39540.000	1.12E-17	1.13E-17	1.014	39815.000	1.10E-17	1.11E-17	1.012	40090.000	1.08E-17	1.10E-17	1.023
39545.000	1.11E-17	1.13E-17	1.019	39820.000	1.09E-17	1.11E-17	1.020	40095.000	1.08E-17	1.11E-17	1.026
39550.000	1.11E-17	1.13E-17	1.019	39825.000	1.09E-17	1.11E-17	1.021	40100.000	1.08E-17	1.11E-17	1.025
39555.000	1.10E-17	1.13E-17	1.027	39830.000	1.08E-17	1.11E-17	1.031	40105.000	1.08E-17	1.10E-17	1.020
39560.000	1.10E-17	1.13E-17	1.025	39835.000	1.09E-17	1.11E-17	1.022	40110.000	1.08E-17	1.10E-17	1.022
39565.000	1.10E-17	1.13E-17	1.024	39840.000	1.09E-17	1.11E-17	1.019	40115.000	1.08E-17	1.10E-17	1.023
39570.000	1.11E-17	1.13E-17	1.014	39845.000	1.08E-17	1.11E-17	1.026	40120.000	1.09E-17	1.11E-17	1.016
39575.000	1.10E-17	1.12E-17	1.022	39850.000	1.09E-17	1.11E-17	1.015	40125.000	1.08E-17	1.11E-17	1.027
39580.000	1.10E-17	1.12E-17	1.022	39855.000	1.09E-17	1.11E-17	1.015	40130.000	1.08E-17	1.11E-17	1.029
39585.000	1.10E-17	1.12E-17	1.022	39860.000	1.09E-17	1.11E-17	1.014	40135.000	1.09E-17	1.11E-17	1.022
39590.000	1.11E-17	1.13E-17	1.014	39865.000	1.09E-17	1.11E-17	1.016	40140.000	1.09E-17	1.12E-17	1.025
39595.000	1.10E-17	1.13E-17	1.027	39870.000	1.09E-17	1.11E-17	1.016	40145.000	1.09E-17	1.12E-17	1.027

Comparison of ozone cross sections at 195 K: HCO and Bass data with RATIO = Bass / HCO (15)

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
40150.000	1.09E-17	1.12E-17	1.024	40425.000	1.04E-17	1.06E-17	1.023	40700.000	1.01E-17	1.03E-17	1.015
40155.000	1.09E-17	1.11E-17	1.022	40430.000	1.04E-17	1.07E-17	1.026	40705.000	1.01E-17	1.02E-17	1.015
40160.000	1.09E-17	1.11E-17	1.021	40435.000	1.03E-17	1.06E-17	1.034	40710.000	1.02E-17	1.03E-17	1.006
40165.000	1.09E-17	1.11E-17	1.016	40440.000	1.04E-17	1.06E-17	1.022	40715.000	1.01E-17	1.03E-17	1.017
40170.000	1.09E-17	1.10E-17	1.008	40445.000	1.05E-17	1.06E-17	1.010	40720.000	1.01E-17	1.03E-17	1.017
40175.000	1.09E-17	1.11E-17	1.015	40450.000	1.03E-17	1.06E-17	1.027	40725.000	1.01E-17	1.02E-17	1.015
40180.000	1.08E-17	1.11E-17	1.029	40455.000	1.03E-17	1.06E-17	1.026	40730.000	1.00E-17	1.02E-17	1.024
40185.000	1.08E-17	1.11E-17	1.028	40460.000	1.03E-17	1.05E-17	1.023	40735.000	9.99E-18	1.02E-17	1.024
40190.000	1.09E-17	1.11E-17	1.016	40465.000	1.03E-17	1.05E-17	1.021	40740.000	1.00E-17	1.02E-17	1.022
40195.000	1.08E-17	1.10E-17	1.022	40470.000	1.04E-17	1.05E-17	1.009	40745.000	1.00E-17	1.02E-17	1.020
40200.000	1.08E-17	1.10E-17	1.021	40475.000	1.02E-17	1.05E-17	1.027	40750.000	1.00E-17	1.02E-17	1.019
40205.000	1.07E-17	1.10E-17	1.027	40480.000	1.02E-17	1.05E-17	1.026	40755.000	9.96E-18	1.02E-17	1.022
40210.000	1.07E-17	1.09E-17	1.022	40485.000	1.02E-17	1.04E-17	1.024	40760.000	1.01E-17	1.02E-17	1.008
40215.000	1.07E-17	1.09E-17	1.019	40490.000	1.02E-17	1.04E-17	1.020	40765.000	1.00E-17	1.01E-17	1.014
40220.000	1.07E-17	1.09E-17	1.016	40495.000	1.01E-17	1.04E-17	1.025	40770.000	1.01E-17	1.01E-17	1.002
40225.000	1.06E-17	1.09E-17	1.024	40500.000	1.02E-17	1.04E-17	1.015	40775.000	9.88E-18	1.01E-17	1.025
40230.000	1.06E-17	1.08E-17	1.023	40505.000	1.01E-17	1.03E-17	1.024	40780.000	9.84E-18	1.01E-17	1.025
40235.000	1.06E-17	1.08E-17	1.022	40510.000	1.01E-17	1.03E-17	1.022	40785.000	9.88E-18	1.00E-17	1.016
40240.000	1.06E-17	1.08E-17	1.018	40515.000	1.00E-17	1.03E-17	1.030	40790.000	9.88E-18	1.00E-17	1.016
40245.000	1.05E-17	1.08E-17	1.025	40520.000	1.01E-17	1.03E-17	1.018	40795.000	9.81E-18	9.97E-18	1.016
40250.000	1.04E-17	1.07E-17	1.031	40525.000	1.01E-17	1.03E-17	1.017	40800.000	9.69E-18	9.93E-18	1.025
40255.000	1.05E-17	1.07E-17	1.018	40530.000	1.01E-17	1.03E-17	1.016	40805.000	9.66E-18		
40260.000	1.05E-17	1.07E-17	1.014	40535.000	1.01E-17	1.03E-17	1.018	40810.000	9.68E-18		
40265.000	1.04E-17	1.06E-17	1.024	40540.000	1.00E-17	1.03E-17	1.028	40815.000	9.69E-18		
40270.000	1.04E-17	1.06E-17	1.022	40545.000	1.01E-17	1.03E-17	1.018	40820.000	9.61E-18		
40275.000	1.04E-17	1.06E-17	1.020	40550.000	1.01E-17	1.03E-17	1.020	40825.000	9.57E-18		
40280.000	1.04E-17	1.06E-17	1.023	40555.000	1.00E-17	1.03E-17	1.029	40830.000	9.56E-18		
40285.000	1.04E-17	1.06E-17	1.024	40560.000	9.91E-18	1.03E-17	1.035	40835.000	9.58E-18		
40290.000	1.04E-17	1.06E-17	1.023	40565.000	1.00E-17	1.03E-17	1.026	40840.000	9.51E-18		
40295.000	1.04E-17	1.06E-17	1.023	40570.000	1.01E-17	1.03E-17	1.016	40845.000	9.60E-18		
40300.000	1.04E-17	1.06E-17	1.022	40575.000	1.01E-17	1.02E-17	1.012	40850.000	9.59E-18		
40305.000	1.04E-17	1.06E-17	1.020	40580.000	1.01E-17	1.02E-17	1.012	40855.000	9.46E-18		
40310.000	1.05E-17	1.06E-17	1.012	40585.000	1.01E-17	1.02E-17	1.015	40860.000	9.58E-18		
40315.000	1.05E-17	1.07E-17	1.018	40590.000	1.01E-17	1.02E-17	1.012	40865.000	9.50E-18		
40320.000	1.05E-17	1.07E-17	1.020	40595.000	1.01E-17	1.02E-17	1.010	40870.000	9.55E-18		
40325.000	1.06E-17	1.07E-17	1.010	40600.000	1.01E-17	1.02E-17	1.010	40875.000	9.59E-18		
40330.000	1.05E-17	1.07E-17	1.017	40605.000	1.01E-17	1.02E-17	1.011	40880.000	9.65E-18		
40335.000	1.06E-17	1.07E-17	1.010	40610.000	1.00E-17	1.02E-17	1.023	40885.000	9.56E-18		
40340.000	1.05E-17	1.08E-17	1.025	40615.000	1.00E-17	1.02E-17	1.024	40890.000	9.54E-18		
40345.000	1.04E-17	1.08E-17	1.036	40620.000	1.01E-17	1.02E-17	1.015	40895.000	9.55E-18		
40350.000	1.05E-17	1.08E-17	1.026	40625.000	1.00E-17	1.03E-17	1.025	40900.000	9.52E-18		
40355.000	1.05E-17	1.07E-17	1.023	40630.000	1.01E-17	1.02E-17	1.014	40905.000	9.59E-18		
40360.000	1.05E-17	1.08E-17	1.024	40635.000	1.00E-17	1.02E-17	1.022	40910.000	9.54E-18		
40365.000	1.04E-17	1.08E-17	1.035	40640.000	1.01E-17	1.03E-17	1.015	40915.000	9.58E-18		
40370.000	1.04E-17	1.07E-17	1.025	40645.000	1.01E-17	1.03E-17	1.018	40920.000	9.63E-18		
40375.000	1.02E-17	1.06E-17	1.042	40650.000	1.02E-17	1.03E-17	1.008	40925.000	9.58E-18		
40380.000	1.03E-17	1.07E-17	1.038	40655.000	1.02E-17	1.03E-17	1.006	40930.000	9.52E-18		
40385.000	1.05E-17	1.07E-17	1.026	40660.000	1.01E-17	1.02E-17	1.014	40935.000	9.47E-18		
40390.000	1.05E-17	1.06E-17	1.014	40665.000	1.01E-17	1.03E-17	1.016	40940.000	9.53E-18		
40395.000	1.04E-17	1.07E-17	1.026	40670.000	1.02E-17	1.03E-17	1.008	40945.000	9.63E-18		
40400.000	1.05E-17	1.07E-17	1.017	40675.000	1.02E-17	1.03E-17	1.010	40950.000	9.57E-18		
40405.000	1.05E-17	1.07E-17	1.017	40680.000	1.02E-17	1.03E-17	1.009	40955.000	9.58E-18		
40410.000	1.05E-17	1.07E-17	1.016	40685.000	1.01E-17	1.03E-17	1.017	40960.000	9.55E-18		
40415.000	1.05E-17	1.07E-17	1.015	40690.000	1.03E-17	1.03E-17	0.999	40965.000	9.59E-18		
40420.000	1.05E-17	1.06E-17	1.012	40695.000	1.02E-17	1.03E-17	1.008	40970.000	9.57E-18		

9.76E 18 1.026

Comparison of ozone cross sections at 195 K: HCO and Bass data with RATIO = Bass / HCO

Wavenumber	HCO	BASS	RATIO	Wavenumber	HCO	BASS	RATIO
41800.000	7.71E-18	7.96E-18	1.032	42075.000	7.24E-18		
41805.000	7.70E-18			42080.000	7.25E-18		
41810.000	7.76E-18			42085.000	7.17E-18		
41815.000	7.80E-18			42090.000	7.07E-18		
41820.000	7.72E-18			42095.000	7.09E-18		
41825.000	7.65E-18			42100.000	7.09E-18	7.31E-18	1.031
41830.000	7.61E-18			42105.000	7.15E-18		
41835.000	7.67E-18			42110.000	7.18E-18		
41840.000	7.71E-18			42115.000	7.13E-18		
41845.000	7.68E-18			42120.000	7.08E-18		
41850.000	7.64E-18			42125.000	7.11E-18		
41855.000	7.64E-18			42130.000	7.11E-18		
41860.000	7.63E-18			42135.000	6.97E-18		
41865.000	7.61E-18			42140.000	7.03E-18		
41870.000	7.63E-18			42145.000	7.08E-18		
41875.000	7.60E-18			42150.000	7.06E-18		
41880.000	7.56E-18			42155.000	7.07E-18		
41885.000	7.67E-18			42160.000	7.02E-18		
41890.000	7.56E-18			42165.000	7.00E-18		
41895.000	7.59E-18			42170.000	7.07E-18		
41900.000	7.56E-18	7.74E-18	1.023	42175.000	7.04E-18		
41905.000	7.50E-18			42180.000	6.96E-18		
41910.000	7.48E-18			42185.000	6.98E-18		
41915.000	7.53E-18			42190.000	6.97E-18		
41920.000	7.48E-18			42195.000	7.03E-18		
41925.000	7.50E-18			42200.000	6.98E-18	7.10E-18	1.018
41930.000	7.49E-18			42205.000	6.93E-18		
41935.000	7.53E-18			42210.000	6.86E-18		
41940.000	7.47E-18			42215.000	6.93E-18		
41945.000	7.46E-18			42220.000	6.88E-18		
41950.000	7.47E-18			42225.000	6.91E-18		
41955.000	7.45E-18			42230.000	6.92E-18		
41960.000	7.40E-18			42235.000	6.81E-18		
41965.000	7.44E-18			42240.000	6.84E-18		
41970.000	7.56E-18			42245.000	6.86E-18		
41975.000	7.45E-18			42250.000	6.76E-18		
41980.000	7.39E-18			42255.000	6.73E-18		
41985.000	7.44E-18			42260.000	6.81E-18		
41990.000	7.36E-18			42265.000	6.76E-18		
41995.000	7.35E-18			42265.000	6.76E-18		
42000.000	7.33E-18	7.55E-18	1.030				
42005.000	7.31E-18						
42010.000	7.40E-18						
42015.000	7.34E-18						
42020.000	7.28E-18						
42025.000	7.24E-18						
42030.000	7.35E-18						
42035.000	7.32E-18						
42040.000	7.32E-18						
42045.000	7.33E-18						
42050.000	7.25E-18						
42055.000	7.21E-18						
42060.000	7.25E-18						
42065.000	7.20E-18						
42070.000	7.19E-18						

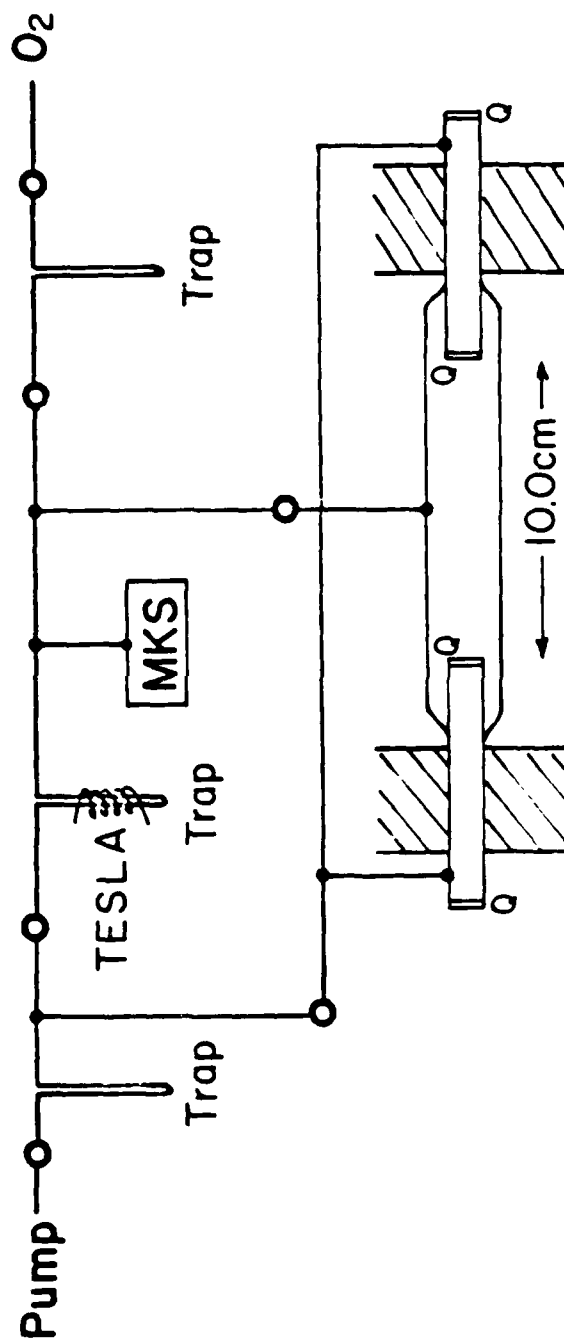


Figure 1. Experimental arrangement for preparation of ozone

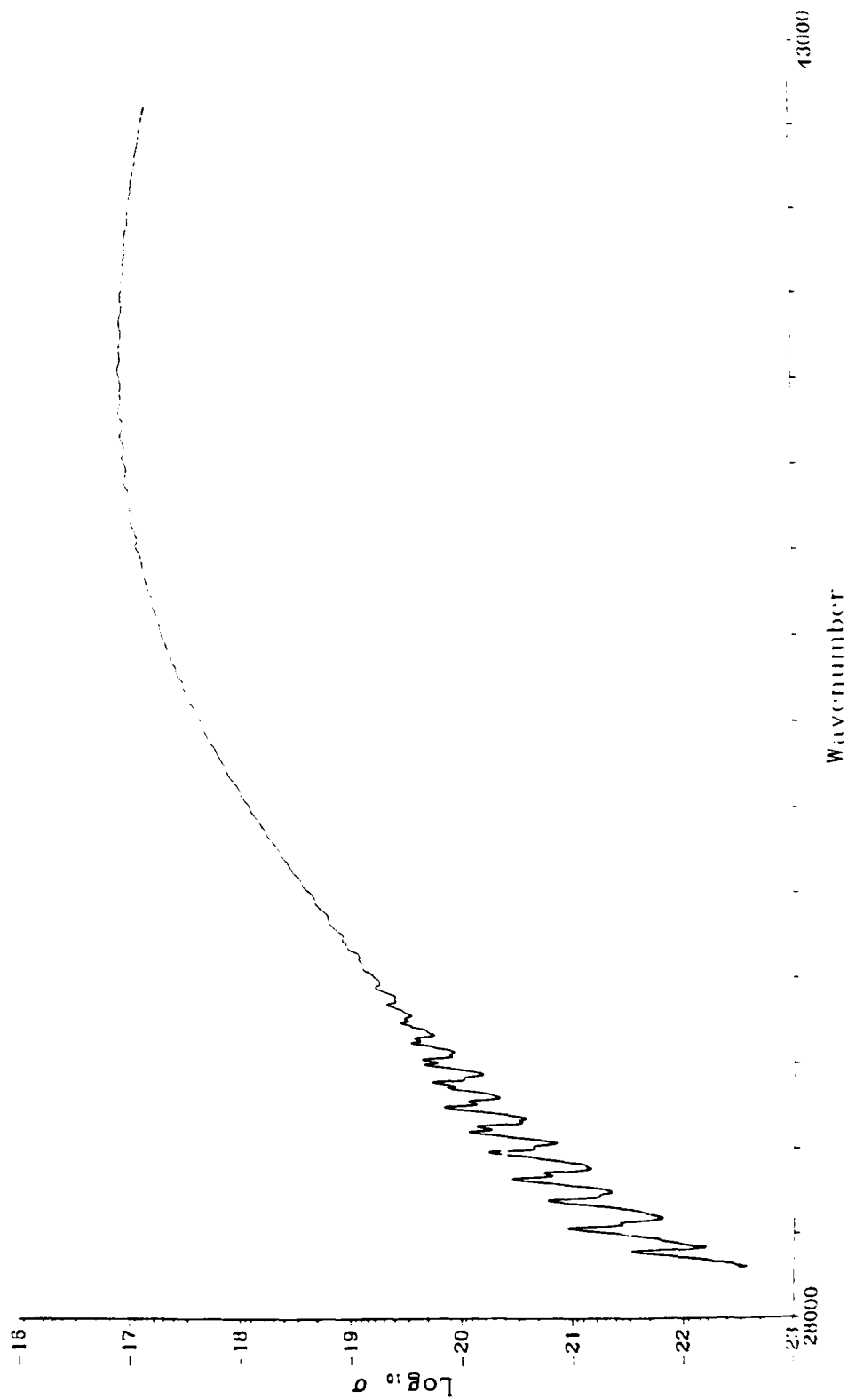


Figure 2. The cross sections of ozone at 195 K in the absolute base by the present measurements from our published relative measurements.

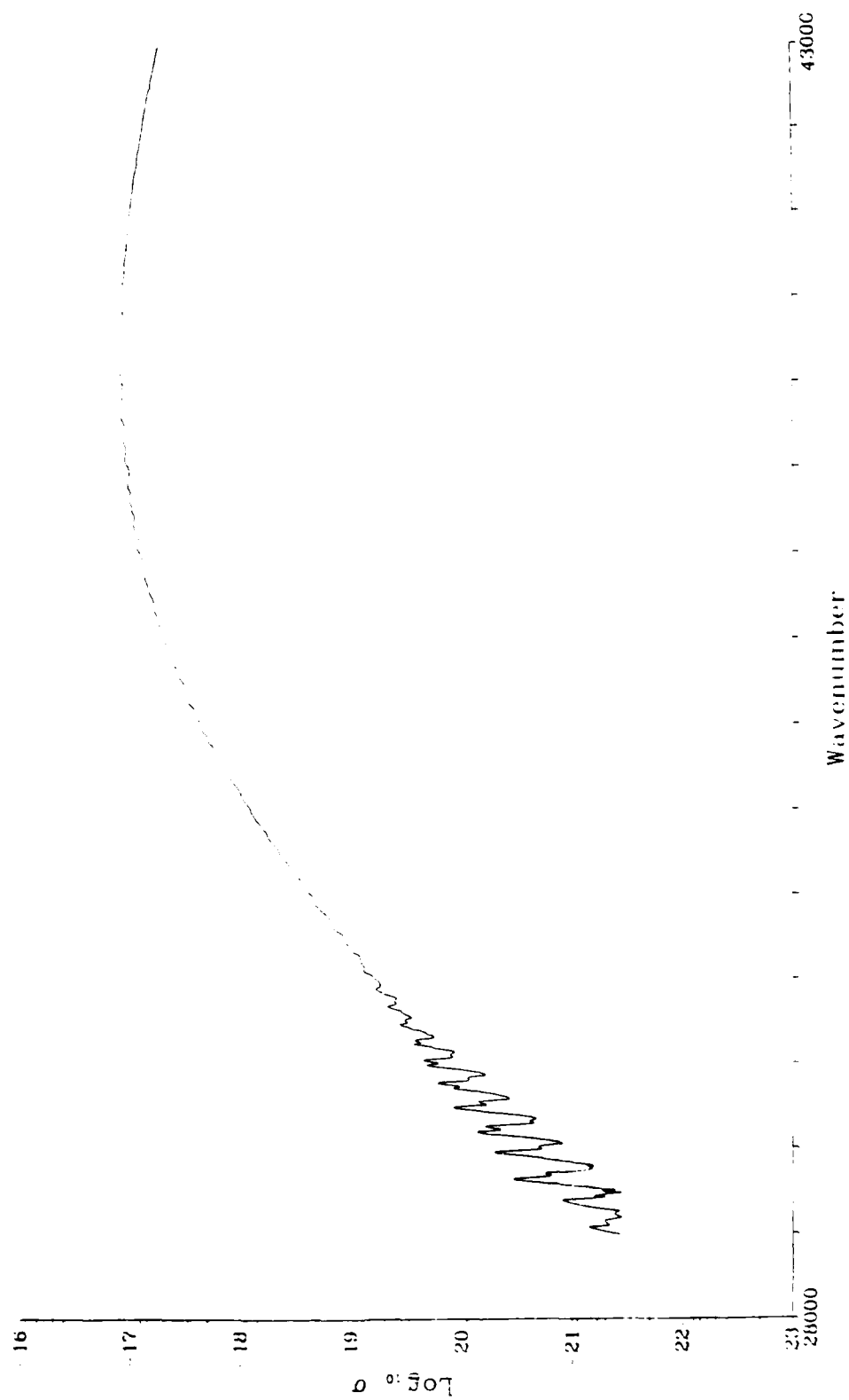


Figure 3. The cross sections of ozone at 195 K calculated from parameters supplied by Bass.